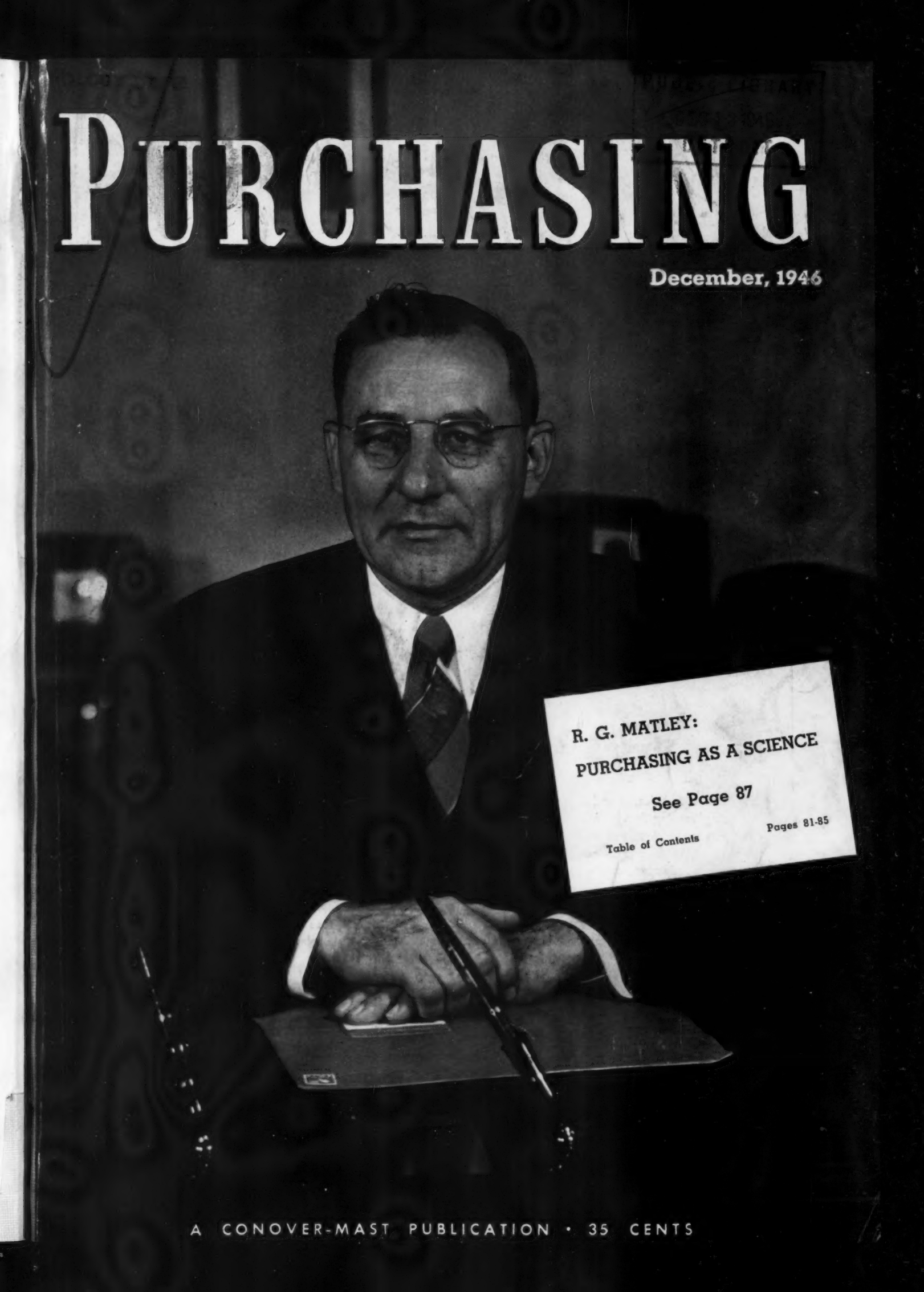
PURCHASING

December, 1946



R. G. MATLEY:
PURCHASING AS A SCIENCE

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A CONOVER-MAST PUBLICATION • 35 CENTS

GREATER PRODUCTION EFFICIENCY—

WHATEVER YOU MAKE

TEXACO Lubricants and Specialized Lubrication Engineering Service are helping management get greater production efficiency in plants of every size and type all over the country. *Texaco* can help increase production, reduce rejects and lower unit costs in *your* plant, too—whatever you make.

Texaco Cutting and Soluble Oils, for example, assure faster, finer machining, longer tool life and less down time — whatever the metal or the machining method.

Texaco Regal Oils (R & O) keep hydraulic units operating efficiently and economically — prevent formation of the sludge and rust which cause costly, time-consuming stoppages.

Texaco Regal Starfak prolongs the life of ball and roller bearings, reduces repairs and replacements, cuts maintenance costs — in fact, exceeds every test requirement for an ideal anti-friction bearing lubricant.

You can assure these and other cost-saving benefits in *your* plant by calling the nearest of the more than 2300 Texaco distributing plants in the 48 States, or writing The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants, Fuels and Lubrication Engineering Service

Tune in...TEXACO STAR THEATRE presents the NEW EDDIE BRACKEN SHOW every Sunday night. Metropolitan Opera broadcasts every Saturday afternoon.

ECHNOLOGY DEPT

Carefully Balanced Century Motors

Century 3 horsepower squirrel cage motor driving a grinder.

Help Maintain Closer Tolerances

The unusual freedom from vibration of Century Motors means that the accuracy of your Century powered machines is protected. You get all the precision your equipment is designed to give. Production rejects are fewer.

Century motors maintain their smooth starting and running qualities throughout a long life of satisfactory service, because they are ruggedly built to withstand the toughest kind of service.

Century's wide range of types and sizes from 1/6 to 400 horsepower enables you to select the correct standard Century motor for your application — without sacrificing the qualities necessary to the operation of your equipment. Specify Century on all your electrically powered equipment.

Century C MOTORS

CENTURY ELECTRIC COMPANY

1806 Pine St. • St. Louis 3, Mo.

Offices and Stock Points in Principal Cities

492

PURCHASING, published monthly by Conover-Mast Magazines, Inc. Publication Office, Orange, Conn. Editorial and Executive Offices 205 East 42nd St., New York 17, N. Y. Entered as second-class matter August 8, 1942, at the Post Office in Orange, Conn., under the act of March 3, 1879. Subscription, $3 for one year, $5 for two years in the U. S. A. Canada and Foreign $4.00. Volume 21, No. 6.

1. Hard, close-woven, rubber-impregnated—full width, without seam—duck plies offer peak load-carrying and fastener-holding strength, with maximum flexibility.
2. Rubber skim between plies affords added flexibility, heat elimination.
3. Friction surfaces on both outer plies permit operation of belt from either side with same high pulley traction.
4. Edges cemented and sealed against moisture, fumes, etc.

MAKING *ANOTHER* COOL MILLION

THE PICTURE shows a Republic Challenger Transmission Belt on a deep well drive in a mining industry. The important thing about it is that the belt is on its way to making, for the fifth time, another *cool million* revolutions around the pulleys. This ability to run cool will enable it to stay on the job considerably longer, give more troublefree service than its predecessor, another type belt. Challenger gets its cool-running properties from a unique, square-edge construction that affords maximum flexibility and pulley traction, the latter allowing operation at low slack side tension. Ask your nearby Republic Distributor to show you specifically where Challenger will provide increased belt efficiency for you.

MORE SERVICE FROM RUBBER FOR INDUSTRY

REPUBLIC RUBBER

DIVISION

LEE RUBBER & TIRE CORPORATION

YOUNGSTOWN 1, OHIO

REPUBLIC INDUSTRIAL PRODUCTS
YOUNGSTOWN, O

LEE DELUXE TIRES AND TUBES
CONSHOHOCKEN, PA

How You Can Get More Freight Cars

With today's railroad freight car shortage continuing, it is imperative that we all again review our use of cars and determine what we can do to speed up the movement of freight.

Doing everything they can, American railroads have been unable to meet the demands. Actually, average miles traveled per car per day dropped from 51 in the second quarter of 1945 to 38.6 in the same quarter of 1946.

The railroads are making a serious effort to speed up switching and hauling time. We, the shippers and receivers, can also help by speeding up loading and unloading of cars . . . reduce waiting time at our sidings. If your plant is operating on a five day week, why not do your freight car loading and unloading on a six day basis and release those cars one day early.

If the average time of handling a car can be reduced a single day, the additional freight that can be hauled will be the equivalent of 100,000 extra railroad freight cars. You can also make your freight cars do *more* if you will ship *full carload* instead of *partial car loads*.

For example, in accordance with the Office of Defense Transportation's request we have succeeded in increasing the load in each car by 20% with a consequent 20% reduction in car requirements. As a supplier to the railroads and car building industry, we are furnishing our share of steel for new car construction, though we realize full well that it is not enough.

American manufacturers proved conclusively during the war that we can work in close cooperation. Today, we face another critical period when this same cooperation is needed. Let's all work with the railroads to keep cars moving; reap the benefits of extra shipping space, and speed up our national economy.

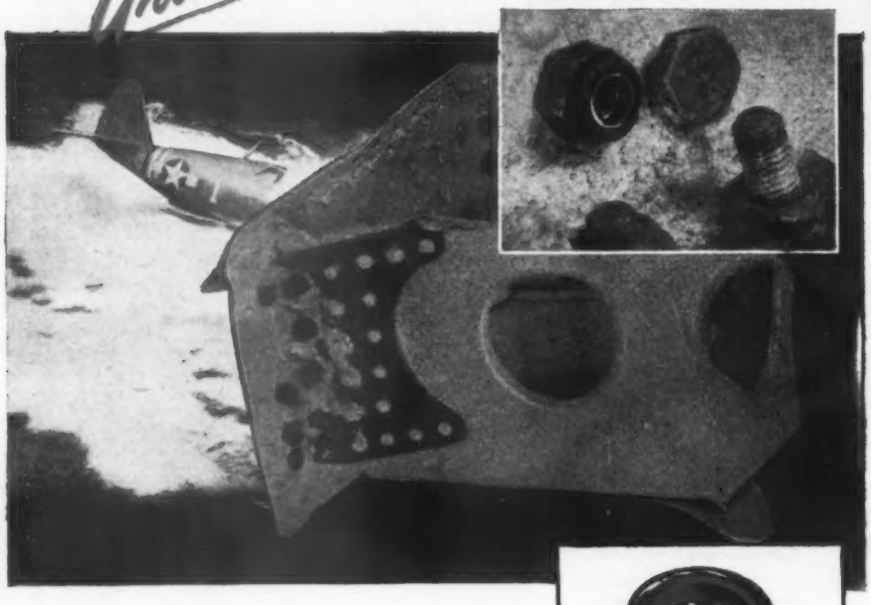
INLAND STEEL CO.

38 South Dearborn Street, Chicago 3, Illinois. Sales Offices: Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul

PRINCIPAL PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • RAILS
FLOOR PLATE • PILING • REINFORCING BARS • TIN PLATE • TRACK ACCESSORIES

Help! Help! Overcome the steel shortage by returning your scrap at once.

2½ YEARS *Under the Sea* BUT THE THREADS ARE STILL CLEAN



The Red Elastic Collar provided perfect protection against LIQUID SEEPAGE

Wartime. A fighting plane crashes into the sea. 2½ years later, a salvage crew fishes out the plane's battered, corroded tailpiece. Its alloy frame has been eaten away, but the ESNA fastened steel reinforcing piece is still intact. A wrench is applied to one of the Elastic Stop Nuts. It is removed with ease. Why? Study the unretouched photos. Note the bright, rust-free working threads. The self-sealing Red Elastic Collar prevented liquid seepage that would have caused an ordinary fastener to rust tight during its 2½ years' submersion.

As this unusual occurrence proves, ESNA Elastic Stop Nuts can be depended upon to provide permanent protection against Liquid Seepage that causes Corrosion. They also protect permanently against Vibration, Thread Damage, and Costly Maintenance. Order Elastic Stop Nuts for maintenance. Specify them on new equipment. Or let ESNA study your specific fastener problems. Address: Elastic Stop Nut Corporation of America, Union, New Jersey. Sales engineers and Distributors are conveniently located in principal cities.

LOOK FOR THE RED COLLAR THE SYMBOL OF SECURITY

It is threadless and permanently elastic. Every bolt — *regardless of commercial tolerances* — impresses (does not cut) its full thread contact in the Red Elastic Collar. This threading action produces a compressive, radial-reactive pressure against *both* the top and bottom sides of the bolt threads inside the nut . . . insures a permanently tight, full contact between the bolt and nut threads . . . and makes all Elastic Stop Nuts self-sealing against Liquid Seepage.

As a result, all Elastic Stop Nuts protect permanently against thread corrosion and subsequent thread failure.

ESNA
TRADE MARK

ELASTIC STOP NUTS

***PRODUCTS OF:* ELASTIC STOP NUT CORPORATION OF AMERICA**

Where to buy
ESNA
TRADE MARK
ELASTIC STOP NUTS

DISTRIBUTORS

Nichols, Dean & Gregg, **ALBERT LEA**, Minn.
Carey Machinery & Supply Co., 119 E. Lombard St., **BALTIMORE**, Maryland
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Smith Bros. Hardware Co., 580 No. 4th St., **COLUMBUS**, Ohio
M. D. Larkin Co., 115-123 East Third St., **DAYTON 1, Ohio**
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Nicols, Dean & Gregg, **NEW ULM**, Minn.
Taylor-Parker Co., Inc., Water and Commercial Place, **NORFOLK** 1, Virginia
Standard Shannon Supply Co., 13 So. Letitia St., **PHILADELPHIA** 6, Pennsylvania
Nicols, Dean & Gregg, **PIPESTONE**, Minn.
Somers, Fitler & Todd Co., 327 Water Street, **PITTSBURGH** 30, Pennsylvania
Nicols, Dean & Gregg, **ROCHESTER**, Minn.
Nicols, Dean & Gregg, 117 W. Fifth St., **ST. PAUL** 2, Minn.
Northwest Bolt & Nut Co., 4502 Fourteenth Ave., N.W., **SEATTLE** 7, Washington
M. D. Larkin Co., **SPRINGFIELD**, Ohio
Syracuse Supply Co., 314-318 W. Fayette St., **SYRACUSE**, New York
Mill & Factory Supply Co., 622 Southard Ave., **TOLEDO**, Ohio
E. Keeler Co., 238 West St., **WILLIAMSPORT**, Pennsylvania
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Nichols, Dean & Gregg, **WORTHINGTON**, Minn.

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1836 Euclid Avenue, **CLEVELAND** 15, Ohio
522 New Center Building, **DETROIT** 15, Michigan
821 Merchants and Manufacturers Building, **HOUSTON**, Texas
Collins-Powell Company, 9247 Alden Drive, **LOS ANGELES**, Beverly Hills, Calif.
James W. Pyke & Co., Ltd., 388 St. James Street, West, **MONTREAL**, Quebec
115 Broadway, **NEW YORK** 6, New York
P. D. DeWitt, 313 East Welsh Road, **PHILADELPHIA**, Willow Grove, Pa.
H. J. Forst, 225 Catalpa Place, **PITTSBURGH** 16, Pennsylvania
2330 Vauxhall Road, **UNION**, New Jersey

The application advertisement shown opposite this column explains the permanent protection provided by all types of Elastic Stop Nuts.

The brush-off that paid off

A SHORT TIME AGO one of our salesmen got the brush off; he lost an important order that he was very anxious to get. He had helped work out a method of using Osborn brushes which increased his customer's operating efficiency. The customer adopted the idea but he bought a competitor's product because Osborn's price was, or so it seemed, 50% higher.

Our man found it pretty hard to believe that his price was so far out of line, so he did some investigating. Osborn's price was indeed higher (47¢ per brush section as against 30¢)—*but operating comparisons showed the Osborn brushes gave three times the service.*

The legitimate comparison therefore was 47¢ against 90¢, in Osborn's favor. That original "brush off" is going to pay off now—for both Osborn as supplier and the Customer as user—because it caused the investigation which showed up the true costs involved.

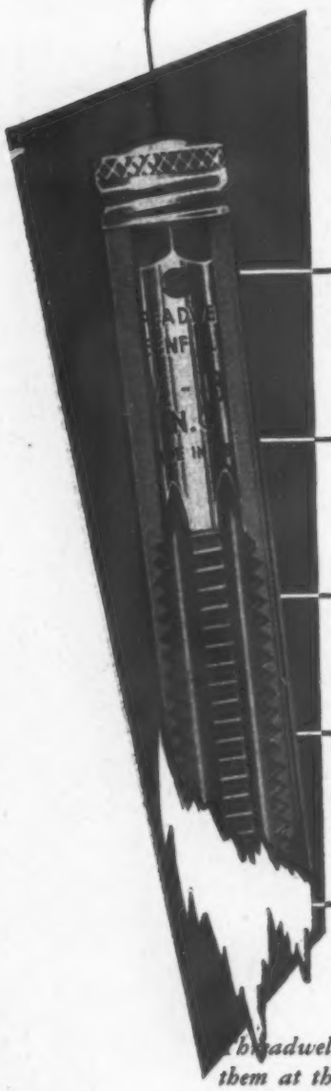
Whenever you have an operation where power brushing can help speed production, improve product, and lower costs (practically all manufacturers have them!)—it will pay you to check Osborn, the world's leading industrial brush maker.

THE OSBORN MANUFACTURING COMPANY
5401 Hamilton Avenue Cleveland, Ohio

Osborn Brushes

WORLD'S LARGEST MANUFACTURER OF BRUSHES FOR INDUSTRY

Yours *At No Extra Cost when you specify* THREADWELL TAPS



"i-dot-ified"—for easy, instant identification of the type of tap —*red* dot for cut thread, *white* dot for commercial ground, *blue* dot for precision ground.

"tap-capsuled"—in individual metal-capped, transparent plastic tubes that provide perfect protection for clean, ground threads and make it easy to select the right tap before unwrapping and handling.

with polished flutes—that provide extra protection against chip clogging and reduce danger of breakage.

"greaseless rust-proofed"—by a special Threadwell process which keeps them clean, dry and shining—never messy or sticky.

"cold-tempered"—at 120° below zero to give them the hardness without brittleness to produce better threads and more of them in steels, cast iron, alloys, plastics and other abrasive materials.

Threadwell Taps are sold exclusively through Mill Supply Distributors. Ask for them at the Threadwell distributor's in your locality. You might as well enjoy these Tap extras since they cost nothing extra.

DISTRIBUTORS IN LEADING
INDUSTRIAL CENTERS
THROUGHOUT THE UNITED STATES
AND THE WORLD

Threadwell
SINCE 1902
"TAPS OF DISTINCTION"

THREADWELL TAP AND DIE COMPANY • GREENFIELD, MASSACHUSETTS, U. S. A.
CALIFORNIA OFFICE, THREADWELL TAP & DIE CO. OF CALIF., 1322 SANTA FE AVE., LOS ANGELES 21

Heavy-duty ICC Drums and Bilge Barrels

★

Light-gage Drums, 55, 30, and 15 gal. capacity and 100 lb. Grease Drums

★

Lightweight Drums for Chemical and Powdered Materials

★

Painted Various Colors or Decorated

Protect your products from contamination

SHIP IN J&L STEEL BARRELS AND DRUMS

Your products will arrive fresh and uncontaminated when protected in transit and storage by J&L Steel Barrel Company drums. In addition to providing safe containers for shortening, edible oils, fats and powders, the drums can be decorated and painted with your colors and trade-mark to do a selling job for you. Write the nearest plant for more information.

J & L STEEL BARREL COMPANY

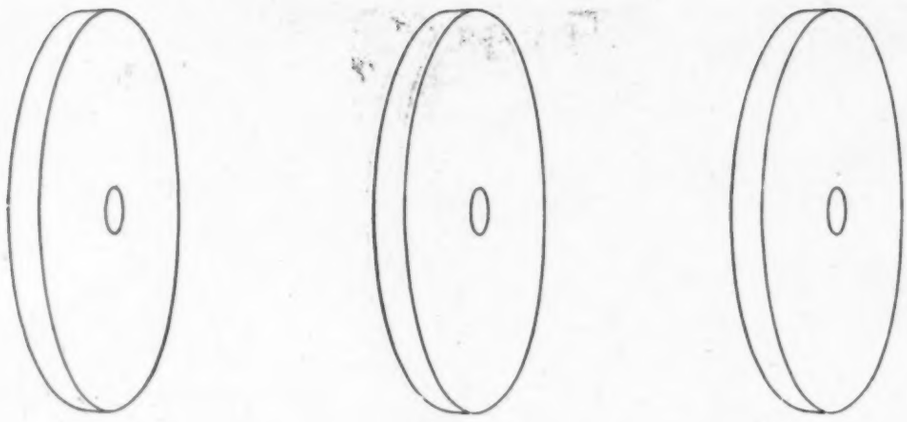
A SUBSIDIARY OF JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PA.

PLANTS:

BAYONNE, N. J. • CLEVELAND, OHIO • PHILADELPHIA, PA. • NEW ORLEANS (GRETNA), LA.
NORTH KANSAS CITY, MO. • PORT ARTHUR, TEXAS

J&L STEEL



H-GRADE Q-GRADE T-GRADE

There's more to grinding grades than the A, B, C's

The A, B, C's which appear as identification on a grinding wheel help simplify proper grade selection. By clearly showing relative hardness, they make your choice quicker, easier...aid in assuring the right grade for the job. That's one reason wheels by CARBORUNDUM are plainly marked. But, there's more to it than the old chestnut, "the softer the metal, the harder the wheel." It's not that easy.

You realize, for instance, that wheel speed itself affects grinding action. The same grade reacts differently at various speeds. The condition of the machine and the amount of vibration can make a difference. Desired finish...required tolerance must be considered. Coolant conditions vary. The actual type of operation—snagging, surfacing, internal grinding or whatever it is—influences practical selection.

Yes—there are many important factors to check before you can be sure of the right grade designation for the job.

That's why we suggest consulting your CARBORUNDUM salesman or our distributor's representative. These men work throughout the year on a wide variety of grinding problems. They are familiar with grinding in production... in tool rooms...wherever it is used. They have practical knowledge and experience to help you pick exactly the wheel you need for the job.

Assisting these representatives in the field are our Abrasive Engineers. Specialized experts, they are equipped to analyze uncommon problems...recommend sound solutions. And, here in our modern laboratories are scientists and technicians who are working on the application of abrasive developments to changing grinding practices.

This *three way route* to better grinding is easy to use. No obligations are incurred. Merely talk "grinding" with a CARBORUNDUM representative. He'll be glad to assist you. The Carborundum Company, Niagara Falls, N. Y.

A good rule for good grinding... **CALL IN**

CARBORUNDUM

TRADE | MARK

ABRASIVE WHEELS

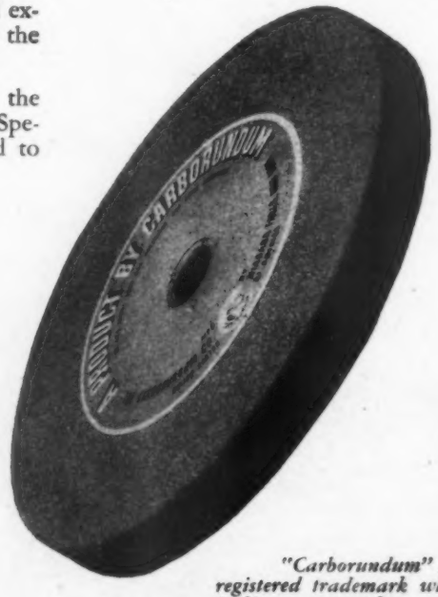
Silicon Carbide
Aluminum Oxide
Diamond

COATED AND BONDED ABRASIVES

Paper and Cloth Combinations
Sheets, Rolls, Discs
Cylinder Hones
Sticks, Stones & Rubs
Specialties

ABRASIVE GRAINS AND COMPOUNDS

for:
Polishing
Lapping
Pressure Blasting
Finishing



"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company

Which "Surplus" TOCCO Machine fits *your* induction heating job?

Let us help you decide.

We maintain complete records of every TOCCO machine ever sold. We can tell you the date it was shipped from our factory . . . the job for which it was originally designed . . . and complete specifications of the unit as it was shipped.

If you intend to buy a Government Surplus induction heating unit, be sure to consult us first because, whether you buy a new TOCCO machine from us or a used "Surplus" unit from the War Assets Administration, we want to make sure that it is the right TOCCO unit for your particular requirements.

Contact us so we can tell you how adaptable any "Surplus" machine is to your particular job. We are authorized dealers for Government Surplus TOCCO Equipment and can facilitate your purchase.

THE OHIO CRANKSHAFT COMPANY
DEPT. N • CLEVELAND 1, OHIO

TOCCO

INDUCTION
HARDENING, BRAZING
ANNEALING, HEATING

Workman of 1862
with Flat Drill
In only 83 years (from the time of the old flat drill) Morse development has ranged from the patenting of the milled twist drill to the modern, high-precision, long-lived High-Speed Drill.
Accuracy, Quality, Uniformity: the MORSE Code of Cutting-Tool Manufacture
MORSE TWIST DRILL & MACHINE COMPANY
The Original Manufacturer of Twist Drills
NEW BEDFORD, MASSACHUSETTS

NEW YORK STORE: 130 LAFAYETTE ST. • CHICAGO STORE: 570 WEST RANDOLPH ST. • SAN FRANCISCO STORE: 1180 FOLSOM ST.

"THE STORY OF THE TWIST DRILL IS THE STORY OF MORSE"

Aborigine with Shaft Drill

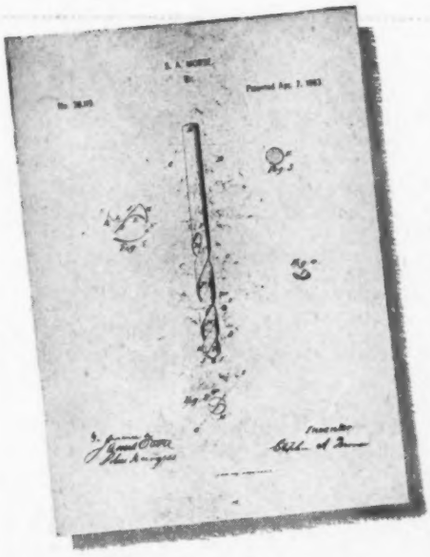
Egyptian with Bow Drill

Chinaman with Pump Drill

For Many Centuries They Drilled It the "HARD WAY" ...until

STEPHEN A. MORSE

Put his New Twist onto the old flat Drill

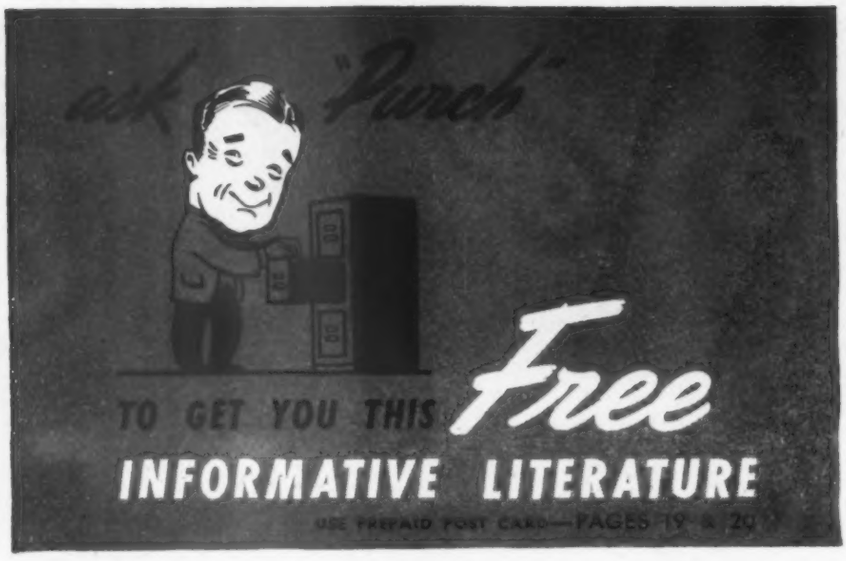


Signed and witnessed patent drawing of first Morse Twist Drill.

It was a long way from the aboriginal drill to the original Morse Twist Drill. All the way from a prehistoric cave to Bridgewater, Massachusetts . . . where Steve Morse patented his invention in 1863.

At first, all Morse Twist Drills were carbon steel, hand-cleared. Then high-speed steels were tried . . . *and forged* . . . and the Morse Drill won new users by the thousands. Meanwhile, groove-area and twist-cut angle were changed to step up speeds and feeds . . . and drills with oil-holes were developed for deep drilling. Next came cobalt steel drills for hard materials . . . drills tipped with tungsten carbide . . . and drills specially treated for abrasion resistance.

Then, as Morse development sped ahead, came standard and special drills for hard rubber, slate, plastics, brass, steel (including manganese) light metals, wood, paper. Today, whatever your drilling job, you can get exactly the Morse Twist Drill you need to do that job with highest speed and accuracy, at lowest cost. Ask your Industrial Supply Distributor, *now,* to get you a Morse specification . . . and count yourself in on all the benefits of Morse's steady advance in twist-drill development.



☐ **1. BRUSHES**—The Fuller line of industrial brushes is illustrated and described in detail in 64-page catalog available from Fuller Brush Company. Brushes and brooms for specific industries and uses are portrayed; machine brushes, mops, dusters, scrub brushes, foundry brushes, bottle brushes, etc., etc. Fuller Brush Co.

☐ **2. ABRASIVES**—New abrasive, Alundum 32, featured by sharp contoured, individual crystal grain, which makes for cooler and freer grinding with less or no wheel dressing is described in detail in Norton Company's "Grits & Grinds" issue No. 9, Vol. 37. Use of wheels for surface grinding, internal grinding and tool room grinding, and superior cutting action is outlined. Norton Co.

☐ **3. CHEMICAL MATERIALS**— New booklet "A Trip Through Hercules Land", explains how Hercules Power Company products are utilized in 12 major industries, and lists 41 industries and the Hercules chemical products used by each. Hercules Powder Co.

☐ **4. SILICONE RESIN**—Thermosetting silicone Resin, DC 2103, heat-stable bonding material for inorganic fabrics in the production of rigid electrical laminates; and for bonding finely divided particles such as powdered metals or mica, silica or carbon, is described in new data sheet of September 30th. Dow Corning Corp.

☐ **5. ZINC PAINT**—List of manufacturers of Metallic Zinc Paint is contained in booklet available from the American Zinc Institute. Manufacturers supply paints containing approximately 80% of metallic zinc dust and 20% of zinc oxide in the pigments. made in accordance with Fed. Spec. TT-P-641.

☐ **6. ELECTRIC CONTROL DEVICES**—Bulletin 100,000, 8 pages contains descriptive information and illustrations of a-c and d-c motor starters, speed and voltage regulators, resistors, ring and plate rheostats, switches, magnetic contactors, relays and dimmers. This is a new bulletin. Ward Leonard Electric Co.

☐ **7. TEXTILE COUNTERS**—Productimeter textile counters, are described in Catalog No. 50 just issued by Durant Mfg. Co. Pick counters and industrial counters described offer mills exact and convenient means of registering textile machine production. Results eliminate guesswork, help maintain maximum production, and provide accurate basis for wage payments.

☐ **8. PUMPS**—Superhydraulic pumps are small enough to be held by one man, yet are capable of developing under positive control, pressures ranging up to 5,000 psi and 40 hp. They are available in two models: the constant delivery model and the variable delivery model. Delivery at 1200 rpm—0 to 17 gpm. Printed matter issued by Superdraulic Corporation describes pumps in detail.

☐ **9. LEATHER PACKING GUIDE** — Cup, Vee, Flange and U types of leather packing are described in Hydraulic and Pneumatic Leather Packing Guide available from Alexander Bros. Tables give leather packing dimensional standards.

☐ **10. GLUES**—Casco and Cascola glues of casein base, in water solution liquid form, ready to use or dilutable with water are described in Service Bulletin No. 32, issued by the Casein Co. of America. They are suited for folding box and carton seams, fibreboard milk containers, spiral wound containers, paper cups, pails, etc.

☐ **11. POLISHING Cloths, Abrasives**—File size brochure contains information on Burrel polishing cloths and abrasives. Swatches of cloth samples are arranged in order of quality with information on size and price. Abrasives listed include sheets, powders, polish and jeweler's rouge. Burrell Technical Supply Co.

☐ **12. CHORE BOYS**—Chore Boys are industrial trucks "of a thousand uses". They are described and illustrated in bulletin issued by the Buda Company.

☐ **13. SODA ASH**—New edition of Technical & Engineering Service Bulletin No. 5, "Soda Ash", 64 pages, gives information on properties, bulk shipments, storage, conveying and elevation, unloading of bulk, unloading of bags and barrels, weighing, proportioning and feeding devices, sampling and anaylisis, precautions and conversion tables. Solvay Sales Corporation.

☐ **14. REFLECTIVE SIGNS**—If you can use reflective signs in plant buildings, warehouses, yards, streets, etc., you should have copy of the Scotchlite Instruction manual, which gives tested and approved methods of utilizing Scotchlite to reflectorize signs. The Scotchlite reflective sign sheeting provides 24 hour visibility. Minnesota Mining & Mfg. Co.

☐ **15. INDUSTRIAL DERMATITIS** — "The Answer to Industrial Dermatitis" is title of instructive booklet issued by the Milburn Co. It contains authoritative accounts of causes of on-the-job dermatitis, and offers a proven safeguard. The creams and liquids are for protective purposes only; not for self medication. Skin irritants are classified by chemicals, and preventive listed with each.

☐ **16. STEEL SCAFFOLDING**—Steel scaffolding and equipment for all types of exterior and interior construction work, maintenance work, etc. are described in bulletin issued by Safeway Steel Products, Inc. Tested and approved by Underwriters' Laboratories, products are described as "light, strong, simple, fast, safe to erect."

☐ **17. POWDERED SOAP**—"How to Buy Powdered Soap" issued by the Sugar Beet Products Co., Chemical By-Products Divn., is an interesting exposition of soaps used in industrial skin cleansers and "scrubbers" and detergents.

☐ **18. HOISTS**—"Bob-Cat" electric cable hoists are described and illustrated in 8-page bulletin issued by Lisbon Hoist & Crane Co. The Bob-Cat is a heavy-duty light weight, compact, rugged hoist. Bulletin contains cross section of the hoists, illustrations of parts, tables, etc.

☐ **19. BROACH SHARPENING**—"Broach and Tool Sharpening" is the title of new booklet just issued by the Lapointe Machine Tool Co. Booklet was designed for the exclusive use of "Purchasing, tool and operating officials". It explains the many types of broaches and their proper care and handling.

☐ **20. DRILL RIGS**—Bulletin 329 describes the Ideal Consolidated Rig Type 50, which is constructed for fast and economical drilling to a nominal depth of 5000 feet. It has six hoisting speeds, and three rotary speeds with reverse. Bulletin has 12 illustrations, dimensional drawing, shaft speed diagram, and gives complete engineering and operating specifications. National Supply Co.

☐ **21. COLOR CONDITIONING**—"Dupont Color Conditioning for Industry" is new 31-page booklet on the use of color to improve seeing conditions and create a better working environment. "Three-Dimensional Seeing" treatment of machines is depicted with photographs of actual installations. Coordinated functional program for an entire plant is illustrated in cutaway drawing. E. I. DuPont de Nemours Co.

(*Continued on page* 16)

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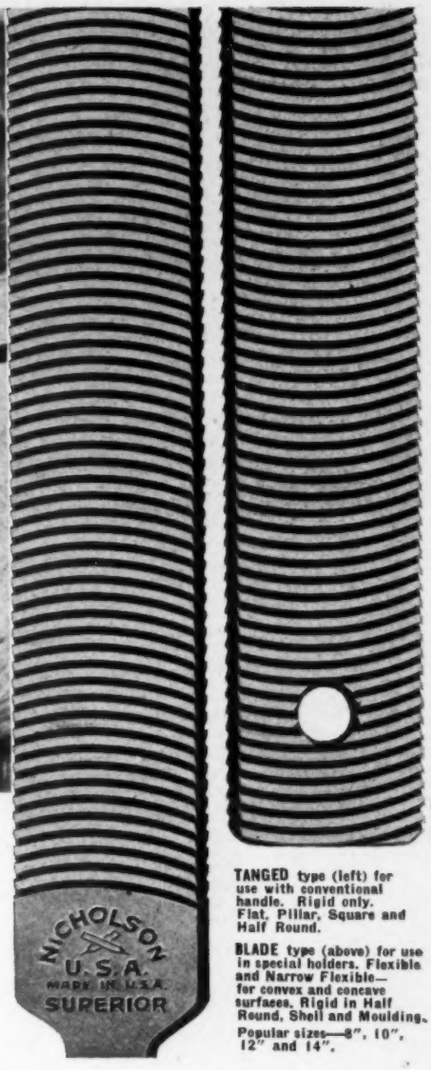

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(*Continued from page* 14)

☐ **22. "CONTROL OF Heat and Power Losses"**—That is title of 20-page manual issued by the Mineral Wool Institute, which tells about the dollar savings made possible by the proper insulation of bare surfaces. Nine case histories are cited, in which insulation paid off in fuel savings in comparatively short time.

☐ **23. CAPACITORS**—Catalog 195-A issued by Cornell-Dubilier Electric Corp. includes latest specifications on all C-D electrolytic, paper and mica capacitors in addition to capacitor test instruments and interference filters; 24 pages, printed in three colors and fully illustrated.

☐ **24. MINING TOOLS**—Catalog M-2 describes Kennametal mining tools for undercutting and drilling in underground mines, horizontal and vertical drilling in surface mines. It provides complete buying information; describes and illustrates proper selection and application, and gives information on proper use and maintenance. Kennametal Inc.

☐ **25. MIDGET RELAYS**—Midget Metal Base Relays are described in bulletin 104, 4 pages issued by Ward Leonard Electric Co. They are designed for use in all applications where space is limited. Bulletin contains coil and contact data, arrangement diagrams, and other data.

☐ **26. GRINDING-FINISHING** — The Purchasing Agent is listed first on booklet titled "Step Up Production with the 3-M Method of Grinding and Finishing" issued by the Minnesota Mining & Mfg. Co. It describes bench backstand belts, abrasive swing grinder belts, segment face contact wheels, and 3-M abrasive belts for handling all grinding and finishing jobs.

☐ **27. WELDING**—"Resistance Welding, Electrodes and Alloys" is the title of Bulletin 68A issued by Ampco Metal, Inc., describing and illustrating Ampcoloy resistance welding alloys and parts.

☐ **28. BLOWERS**—Centrifugal blowers and exhausters are described in Bulletin 120-B-13, just issued by Roots-Connersville Blower Corp. Units are equally effective as boosters or exhausters. They are offered in single and multi-stage types, with capacities up to 100,000 cfm, and at pressures from the lowest to the highest practicable.

☐ **29. WITHHOLDING TAXES**—Samples of 1946 Withholding Tax Form W-2, which fits in #9 window envelope, meets Federal, State and Social Security Requirements in one operation, is available from Consolidated Business Systems, Inc. Company also announces E-Z Dial tax finder which finds correct withholding tax fast, and signals in green when no tax is necessary.

☐ **30. TAPPING GUIDE**—Production Tapping Guide, 30 page pocket-size booklet, has been published by The Cleveland Tapping Machine Co. It contains figures, data and other information designed to assist the estimator, set-up man and operator in employing production tapping to the best advantage. You may want to furnish copies to production and other departments.

☐ **31. CUTTING TOOLS**—Full specifications of the complete Celfor Tool line are set forth in new 96-page catalog available from Celfor Tools, Divn. of Clark Equipment Co. Listed are high speed twist drills, reamers, and carbide cutting inserts.

☐ **32. SAFETY CLOTHING**—Catalog describes Wheeler protective apparel for men and women—complete suits, leggings, helmets, hip leggings, asbestos fireman outfits, gloves, aprons, capes, etc. F. H. Wheeler Mfg. Co.

☐ **33. MILLING MACHINES**—New catalog #M-1506 describes No. 2 MI Milling Machines, product of the Cincinnati Milling & Grinding Machines Inc. The plain, universal, and vertical types are illustrated and features explained in detail.

☐ **34. ALLOY STEELS**—"Two Steels Simplify Your Alloy Needs" is title of booklet issuod by Carpenter Steel Co., telling about Carpenter 5-317 and 158 which are claimed to meet "95% of users' alloy steel requirements," simplifying selection and inventory.

☐ **35. INDUCTION HEATING** — Induction heating and melting are described in new data-packed bulletin No. 28 issued by the Ajax Electrothermic Corp. It shows ways to use high frequency to speed production, reduce costs, and hold closer tolerances in melting, heating for forging, brazing, annealing, and other jobs.

☐ **36. "LEISUREST"** — As name implies this is a couch for use in office, restroom, factory, etc., featured by headrest adjustable to five positions. Circular describes this unit which is sturdily constructed and covered with tearproof and waterproof plastic upholstery; available in variety of colors. Itkin Brothers, Inc.

☐ **37. JACKS**—Catalog 203, 40 pages, just issued gives complete description, data, and specifications for every jack in the Duff-Norton line of lifting jacks. These include ratchet, screw, air motor operated, and hydraulic jacks. Duff-Norton Manufacturing Co.

☐ **62. WEEKLY CALENDAR**—A 12" x 20" spiral bound calendar, consisting of 52 weekly sheets, with engineering data and 12-months calendar on the back, is available from the Frederick Post Company. Each sheet shows week in large figures with current, preceding and following month below.

☐ **38. SPEED DRILLS** — Chart showing "Safe Feeds and Speeds for High Speed Drills", on multigraphed letter-size sheet, is available from Chicago Latrobe Twist Drill Works.

☐ **39. TWIST DRILLS**—Solid carbide and carbide tipped twist drills are described in convenient folder issued by the Super Tool Co. Drills are recommended for drilling abrasive materials such as plastics, nonferrous metals, etc., where great resistance is essential and risk of breakage low.

☐ **40. TWIST DRILLS**—Manual G-1 of 24 pages on the correct principles of sharpening twist drills. It contains data on proper care also. Republic Drill & Tool Co.

☐ **41. STAINLESS .STEEL .TUBING** — "A Guide for the Selection of Seamless and Redrawn Welded Stainless Steel Tubing" is title of publication issued by Summerill Tubing Co. It gives data on characteristics and applications, analysis, mechanical and physical properties of 7 stainless steels which the company draws in the form of round seamless and redrawn welded tubing.

☐ **42. BOILER BLOWDOWN**—Water Treatment Divn. of Magnus Chemical Co. announces new and practical calculating chart for measuring concentration and blowdown in marine and stationary boilers. It is felt that consistent use of chart will bring about considerable savings in fuel and in costs.

☐ **43. QUICK CHANGE CHUCK**—Bulletin describes Rayco High Speed Quick Change Chuck for drill press and hand power tools which permit quick tool changes without shutting off the power tool. Savings in production time and costs are claimed for the chuck. Rayco Mfg. Co.

☐ **44. RADIAL-ARM SAWS** — Bulletin describes Multiplex radial-arm saws which are claimed to perform more operations with greater speed, safety and economy. Saws cut miters, dado miters, bevel miters right or left up to 90°, and handle circle routing and bevel circle routing. Red Star Products Inc.

☐ **45. CARBIDE TOOLS & BLANKS**—New 32-page catalog VR-400 on carbide tools and blanks, is announced by Vascoloy-Ramet Corporation. It lists and illustrates nearly 500 standard tools and blanks, more than 175 of which are new or revised items. New items include shell end mills, solid and tipped boring tools, threading tools, face mill cutter blades, step cutter blades, scraper blanks and carbide tipped scribers.

☐ **46. CABLE, WIRE**—"Flamenol", 16-page, four-color bulletin, describes G-E's Flamenol-

(*Continued on page* 19)

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It's the COMBINATION that counts

"Peak" Diesel Performance is possible . . . but only if BOTH the fuel and the lubricant work for cleaner operation.

WHEN YOU BUY SHELL "DIESELINE," you get a fuel that is 100 per cent refined. Predetermined fractions of selected distillates are carefully blended to exacting specifications which have proved satisfactory in actual operation. Impurities and undesirable fractions are left behind.

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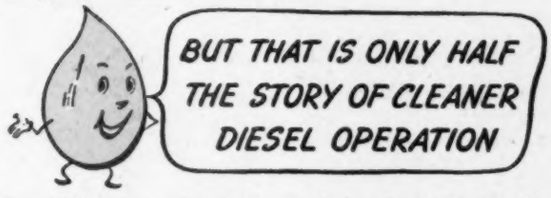

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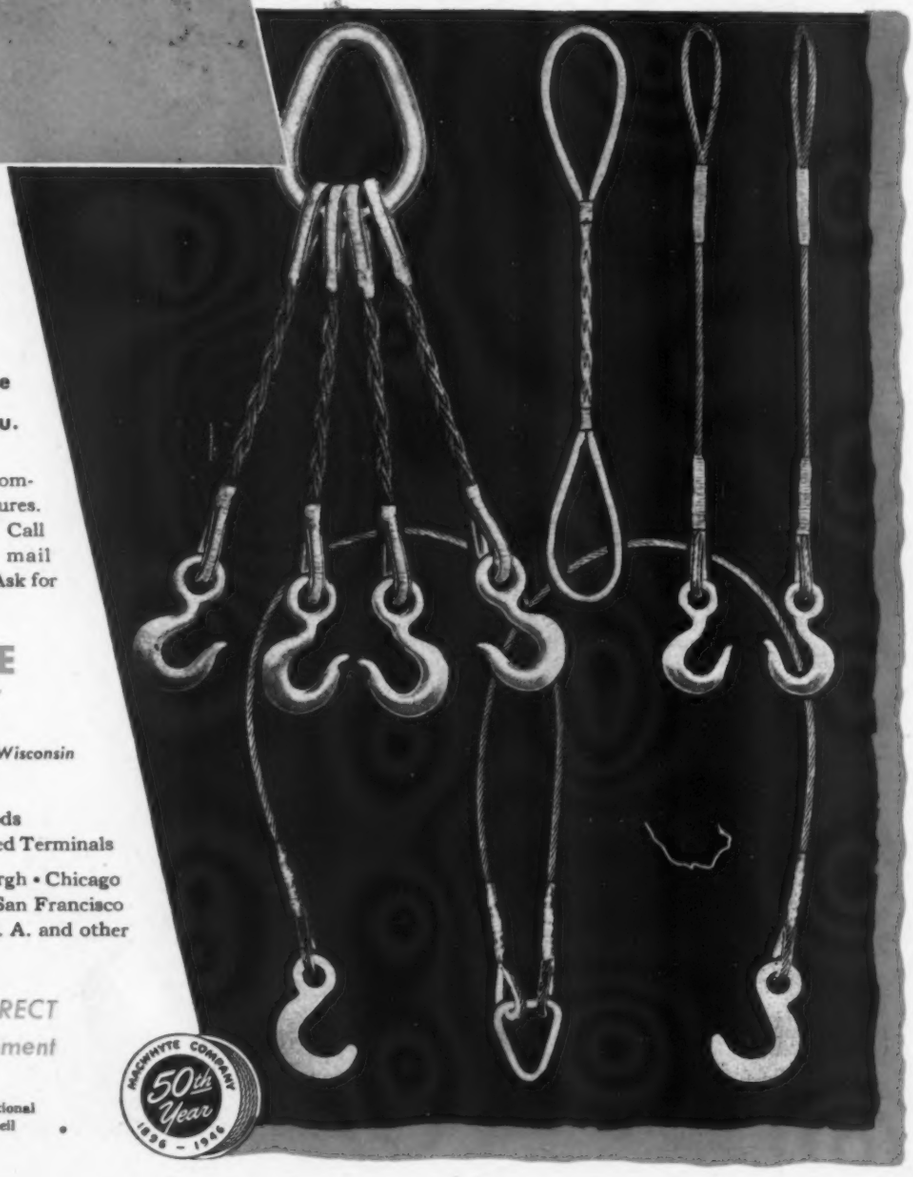

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(*Continued from page* 16)

insulated wire and cable, and illustrations show applications in various industries. Complete ratings and specifications are listed. Bulletin GEA-4352. General Electric Co.

☐ **47. HEAT-TREATING** — Booklet of 8 pages describes Eclipse Fuel Engineering Company's line of Rotair recirculating air-draw furnaces. They are gas-filled and especially designed for heat treating below 1250 deg. F. Operating data, sizes and specifications are given in detail.

☐ **48. GAS REGULATORS**—New line of Rockwell-Emco gas appliance regulators is described in 12-page bulletin No. 1136 issued by Pittsburgh Equitable Meter Divn. of Rockwell Mfg. Co. Complete technical data on sizes, capacities and dimensions is tabulated.

☐ **49. CABLES**—Asbestos protected cables are subject of illustrated bulletin OK-2061 issued by the Okonite Co. which describes the principal types of Okobestos heat and corrosion resistant wires and cables. Among types described are power cables, apparatus cables, multi-conductor control cables, switchboard wires and appliance wire.

☐ **50. GENERATORS** — Generators and Motor Generator Sets, alternating and direct current are described in Form 646 issued by the Century Electric Co. which also illustrates a-c to d-c, d-c to d-c, and d-c to a-c sets.

☐ **51. INSULATION, Sound, Thermal**—"K" Felt, combination of kapok and other selected fibers designed for sound absorption thermal insulation, is described in Data Sheet No. 3 issued by American Felt Co. Tables indicate installation requirements.

☐ **52. BUCKET ELEVATOR** — Internally loaded loop type bucket elevator for the gentle handling of small parts, named Interno bucket elevator, is described in Folder No. 1938 issued by the Link-Belt Company.

☐ **53. CRAWLER TRACTOR**—Bulletin MS-248A, 32 pages, released by Allis-Chalmers Tractor Divn. describes HD-14 Diesel "crawler" tractor; 132 drawbar hp, 6 speeds forward, 2 reverse.

☐ **54. GAS CUTTING**—Special oxyacetylene machine cutting applications are discussed in detail in pamphlet available from Air Reduction Sales Co. It describes commercial and time-saving uses of Electronic Tracing Device; sections are devoted to cutting of new stainless steels, and various cutting operations.

☐ **55. TEMPERATURE RECORDER**—Inkless temperature recorder, Type CF-2 is described in bulletin GEA-4572, released by General Electric Co. Various industrial applications are listed, along with complete specifications.

☐ **56. ARC WELDERS**—Mid-States "Metal Zipper" Welders, "the modern method of metal stitching or metal carpentry," are described in 8-page bulletin. Arc starts automatically, use any welding rod, weld thin walls, portable, and maker states welders cut costs and step up production. Mid-States Equipment Corp.

☐ **57. PIPE BENDER**—Illustrated bulletin A-7, describes portable hydraulic pipe bender built by The Watson-Stillman Co. Bender will bend all standard, extra heavy and double extra heavy steel pipe in sizes ⅜" to 2" incl., as well as standard weight pipe in 2½" and 3" sizes. It will bend solid mild steel bars up to 2" dia.

☐ **58. MAINTENANCE PAINT** — Pen-kote 500 Chemical-resistance paint which is claimed to protect perfectly against acids, alkalis and moisture, and which can be applied quickly to all surfaces without plant shut-down, is described in 4-page bulletin issued by Peninsular Chemical Products Co.

☐ **59. COMPRESSORS** — Single horizontal air and gas compressors are described in Bulletin L-640-B1A issued by the Worthington Pump & Machinery Corp.

☐ **60. CLEANING MACHINE**—Circular describes streamline-design steam cleaning machine known as Model JO Hypressure Jenny instantaneous steam cleaner made by the Homestead Valve Mfg. Co. The cleaner is a compact, portable unit, with large semi-steel wheels. Oil or gas fired units are optional. They are recommended for all types of industrial, automotive and equipment cleaning; floors, walls, windows, etc.

☐ **61. GAGES**—New 20-page catalog No. 846 describes Go-and-No-Go plug and thread gages, snap gages, ring gages, twin-plug gages, measuring wires, and gives data on salvage of war-time surplus gages. Size Control Co. Divn. of American Machine & Gage Co.

☐ **63. MATERIALS HANDLING** — Robins Eliptex Screen which employs all elliptical motion with three separate components: a horizontal component which moves material across the deck; a vertical component which makes the material separate into sizes and "keep-moving"; and an elliptical component which gives sharpest possible sizing, is described in Bulletin 111-A released by Robins Conveyors Inc.

☐ **64. SPOT-WELDERS** — W-Type Bulletin 2-413 describes Taylor-Winfield spot welders available in foot operated, air operated and motor operated types.

☐ **65. FOUNDRY BONDING MORTAR** — Information circular No. 22 describes Ironton Berlite, a super refractory bonding mortar for foundries. Maker states features are: no shrinkage or expansion; resistance to abrasion and erosion; great strength at all temperatures, and excellent working properties. Ironton Fire Brick Co.

☐ **66. WIRE CLOTH, BASKETS, BELTS**—Bulletin No. 79 covers Cambridge high temperature belts for the conveying and treatment of industrial products, wire cloth and metallic screen, and industrial baskets, crates, trays and fixtures. The Cambridge Wire Cloth Co.

☐ **67. LUBRICATION** — Graco Gun-fil lubricators, pressure filled, which form the heart of Graco Industrial Lubricating Systems, are described in bulletin issued by the Gray Company, Inc. Lubricators are said to "offer thoroughly dependable bearing lubrication in every industry".

☐ **68. CONCRETE BRICKS** — Vi-Brik-Crete is the name of a machine for making concrete bricks, announced by R. S. Reed Corporation. Semi-automatic model will produce 28 concrete bricks per minute, according to the company. Bricks have high compressive strength, and low absorption. Bulletin describes the machine.

☐ **69. PYROMETERS** — Bulletin D602-4 describes the Wheelco Instruments Company's line of portable pyrometers. Specifications

(*Continued on page* 20)

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(*Continued from page* 19)
for the proper selection of extension holders, adapters and thermocouple tips are listed in chart form.

☐ **70. BOILERS** — Bulletin 746 describes Springfield Standardized Boilers, which offer "big plant" steam generator performance; 12 capacities — built in pressure standards ranging from 160 to 300 psig; oil or gas firing with any standard industrial burner; standard dimensions; width varies according to number of sections used. Springfield Boiler Co.

☐ **71. GAS CARBURIZING** — Holcroft Gas carburizing furnaces for the mass production industries, are described in bulletin issued by Holcroft & Co. Furnaces are designed for specific applications.

☐ **72. TROLLEYS, HOISTS** — Coffing trolleys, available in plain, ball bearing and rigid plate types, and differential chain hoists are described in bulletin issued by the Coffing Hoist Co.

☐ **73. TESTING MACHINE** — Bulletin describes Sonntag universal impact testing machine for metals. Machine is easily converted from testing specimens to structural parts, and has 6 possible ranges: 25 and 60 ft. lb., 50 and 120 ft. lb., and 100 and 240 ft. lb. Unique design of striking edge permits a quick adjustment for Izod, Charpy or tension testing. Accuracy is guaranteed to be within ASTM specifications. Baldwin Locomotive Works.

☐ **74. SAFETY CONTAINERS** — Waste cans, safety cans which give positive control while pouring, with fire baffle, tilt frame laboratory cans, tank stands, dip tanks and torch filer cans, for reducing fire and explosion hazards, are among units described in bulletin issued by The Protecto-seal Co.

☐ **75. INDUSTRIAL GOGGLES** — Catalog section AWP-50 describes the Eastern Equipment Company's 8 basic spectacle-type goggle designs which are the basis of over 500 different lens, sideshield, and frame combinations, for use in grinding, chipping, welding and other hazardous occupations.

☐ **76. INDUSTRIAL TRUCK** — New type industrial truck, patterned after swiveling gun turrets, is described in bulletin issued by Northrop Aircraft Inc. Turret turns completely around, eliminating need for reverse gear. Turret houses the "Power Package" consisting of 6 hp engine geared to drive wheel. Three models are illustrated and described.

☐ **77. GANTRY CRANES**—One-ton gantry cranes, featuring portability, ease in handling and flexibility, for uses at loading platforms and docks, and in general plant work are described in Bulletin PG-648 issued by Industrial Equipment Co.

☐ **78. DIESEL ENGINES** — "Diesel Engine Cooling Systems" is title of 20 page booklet No. 351, released by Binks Manufacturing Co. Profusely illustrated, booklet will help solve many of the problems encountered in diesel engine cooling.

☐ **79. PUMPS** — Line of close-coupled pumps named Compacunit is described in 8-page bulletin 242 issued by Warren Steam Pump Co. There are 4 types, 42 sizes. Pumps are designed "for a torrent or for a trickle."

☐ **80. CASTING RESIN** — Bulletin describes Kriston Thermosetting Resin of the B. F. Goodrich Chemical Company. It can be cast in transparent, translucent or opaque colors. Applications include cast lenses and prisms, dial and indicator crystals, light shields, illuminated sign parts, and low pressure laminates. Ferrous and non-ferrous materials such as aluminum, glass and plaster of Paris may be used as molds.

☐ **81. CONVEYOR** — Bulletin describes The Stevedore, Jr. belt conveyor (Your Man "Friday"), two models, designed for package and bag handling, loading cars and trucks, low stacking and as booster in gravity conveyor line. The Rapids-Standard Co., Inc.

☐ **82. WEIGHT FEEDERS**—Hardinge feeders for accurate feeding of materials used in the mining, chemical and industrial types (constant weight or volumetric) are discussed in Bulletin 33-D, released by Hardinge Co. Inc. Constant weight-feeder which maintains constant delivered weight, can be adapted to vari-speed or electronic drives. Indicating and recording devices can be used.

☐ **83. PACKINGS** — New Raybestos-Manhattan catalog brings the company's line of industrial packing right up to date. You should have copy of this new issue. Raybestos-Manhattan, Inc., Asbestos Textile & Packing Division.

☐ **84. TRUCK LOADING** — Sixteen-page broadside describes new Clark Trucloader and truck loading method. New fork lift truck is small enough to maneuver easily in the loading area of highway trucks and trailers carrying loads up to 1000 lbs. on elevating forks.

☐ **85. PLASTICS** — Catalog describes Synthane technical plastics — sheets, rods, tubes, fabricated parts, molded-laminated, and molded-lacerated. You should have copy of this catalog for ready reference in your plastics file. Synthane Corp.

☐ **86. HAND TOOLS** — Catalog describes Bernard hand-tools — pliers, nippers, cutters, punches, snips, etc., and specialized hand tools. Wm. Schollhorn Co.

☐ **87. GRINDING WHEELS** — Catalog describes grinding wheels in all grades, grains, shapes and sizes, tool and cutter wheels, cups, internal wheels, drum sanders and bands, wire brushes and other equipment. Chicago Wheel & Mfg. Co.

☐ **88. REBUILT MACHINE Tools**—Catalog covers used machine tools and describes rehabilitation services of Botwinik Bros. of Mass. Inc.

☐ **89. WATERPROOF BAGS** — Booklet describes Bemis Waterproof Bags, and presents "7 Facts about Low-Cost Protective Packaging." Bemis Bro. Bag Co.

☐ **90. ENCLOSED MOTORS** — Bulletin GEA-4400 describes the General Electric Company's new Tri-Clad totally enclosed motors for use in adverse atmospheres.

☐ **91. VEE PACKING**—Literature describes Greene, Tweed & Company's Palmetto pyramid all purpose molded Vee type packing. It is recommended for all types of hydraulic and pneumatic equipment handling hot or cold water, steam, oil, gasoline and most types of solvents and acids.

☐ **92. HEAT TREATMENT Chart** — Peter A. Frasse & Co. offer a quick-check chart on Heat Treatment of Alloy Steels. It is termed an invaluable guide for technically minded buyers.

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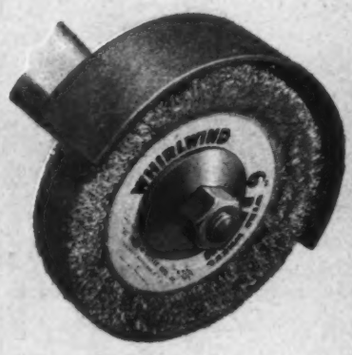

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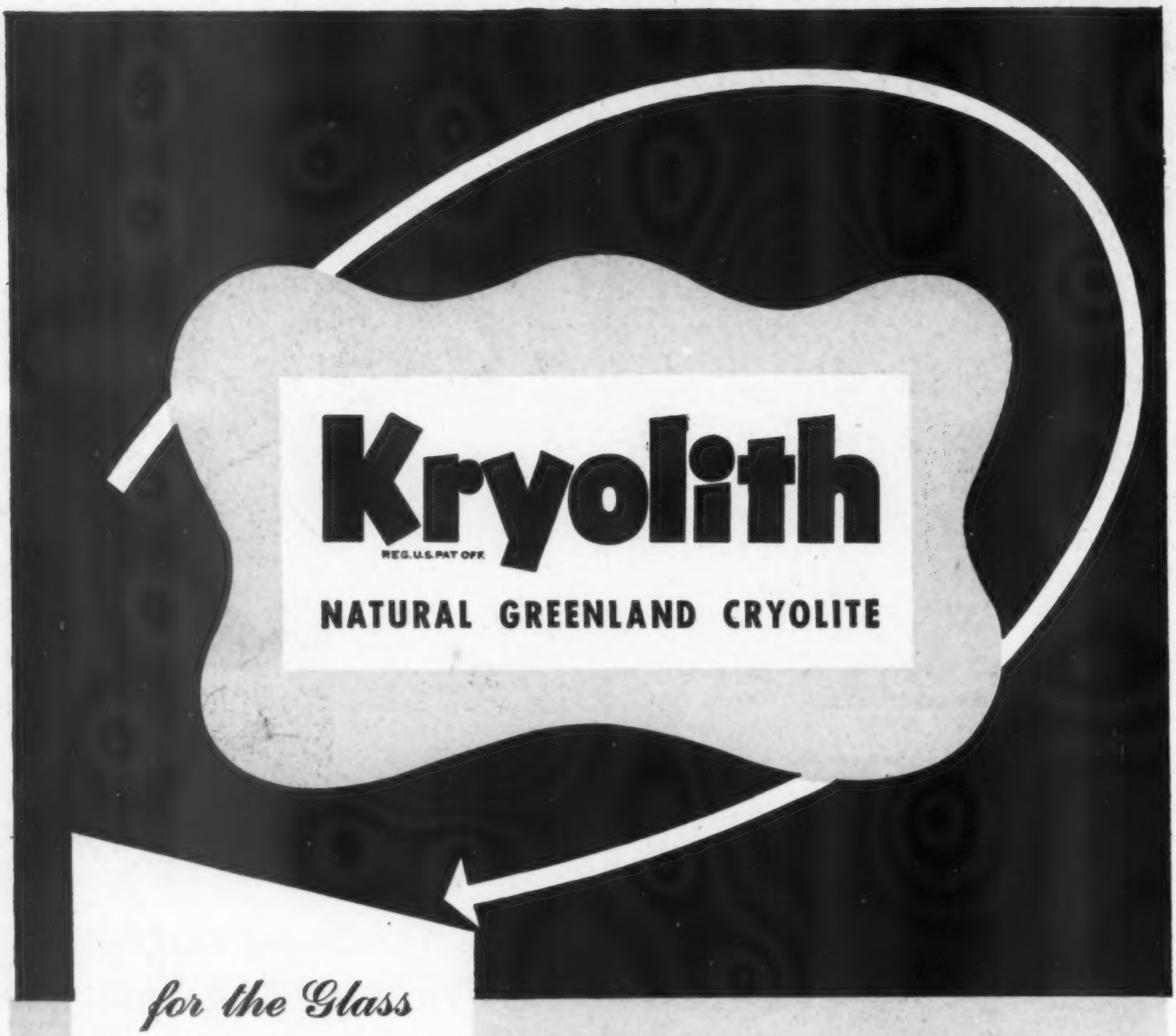

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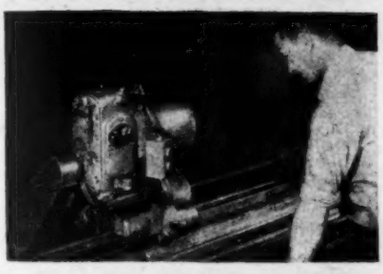
GET ANY SPEED *INSTANTLY---*

HOLD IT *INDEFINITELY!*

WITH THE UNIQUE P.I.V. GEAR SPEED VARIATOR

Cut-away view shows unique chain transmission, tooth-to-tooth contacts, no belt, no slip! Available in five types and seven sizes from ½ to 15 h.p.



P.I.V. Gear on Machine Tool, furnishes ideal speed for grinding hardened steel pins.

P.I.V. Gear on pump maintains accurate feed to chemical mixing process. The rate of feed can be varied to meet all requirements.

P.I.V. Gear in textile mill applied for stretch control on slashers. Preserves elasticity of woolen yarns, increases loom production due to less breaks and fewer loom stops.

Is exact speed a factor in your production method — in the quality of your product — in coordinating steps or stages of your processes?

Investigate the advantages of the Link-Belt P.I.V. Gear Speed Variator. This device permits infinite variations of working speed, without steps. Transmission between high and low speeds is by means of a special type of chain, making tooth-to-tooth contact with grooved steel wheels. Action is *positive;* no slip, creep or loss of power is possible! Settings are made by the turn of a small hand wheel, while the machine is running; adjusted speed remains constant, indefinitely.

The self-contained, all-metal P.I.V. Gear has proved indispensable in countless instances, where speed regulation to the minutest fraction of a revolution per minute assures precise results, safeguards quality, avoids spoilage and waste.

Get full details of P.I.V. Gear — learn how you can apply it to advantage in your plant. Send for Book 1874 — today!

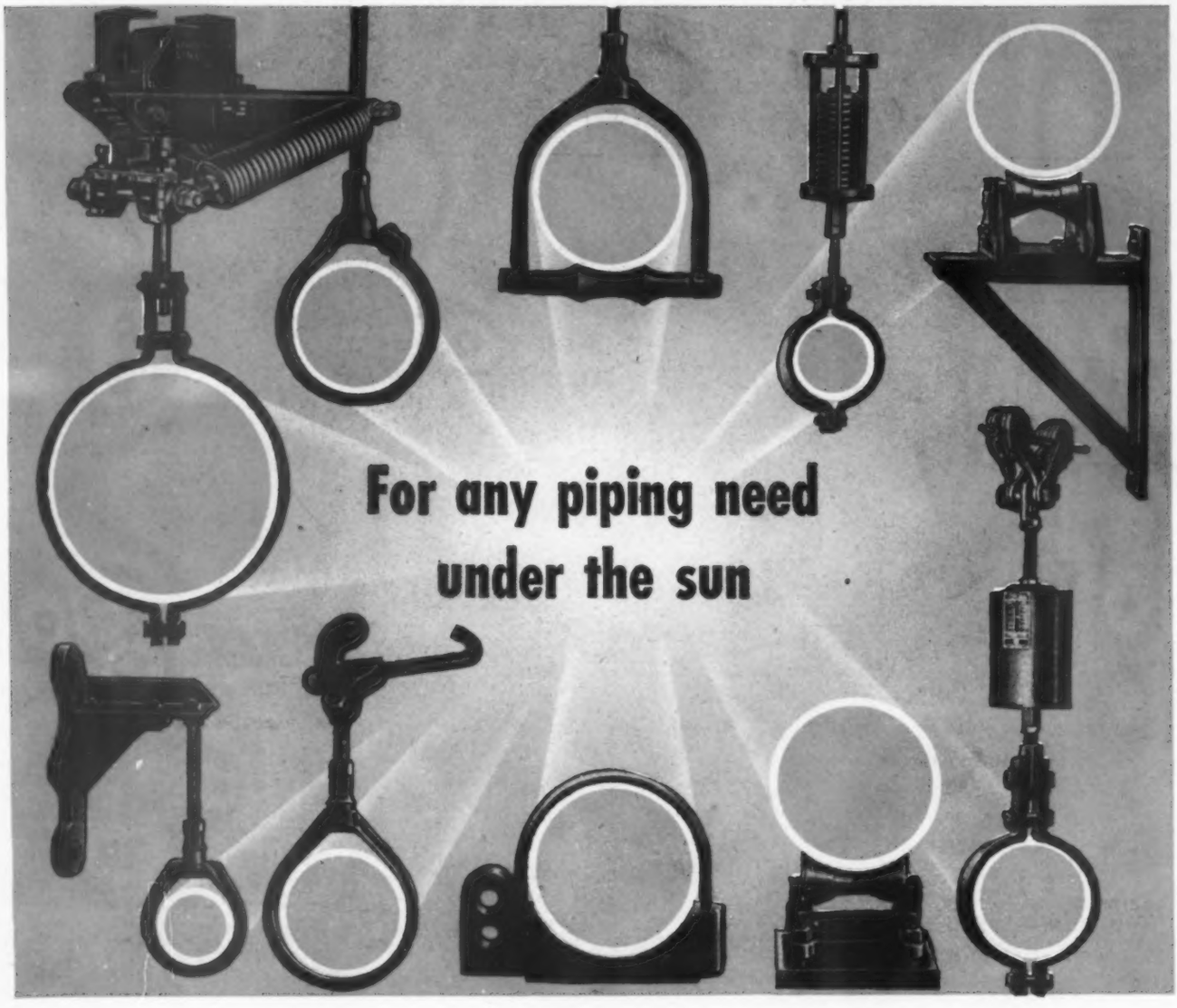
LINK-BELT COMPANY

Chicago 9, Indianapolis 6, Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24, Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities.

10,433

LINK-BELT P.I.V. GEAR

POSITIVE INFINITELY VARIABLE SPEED CONTROL



GRINNELL PIPE HANGERS AND SUPPORTS

There is a standard or special purpose Grinnell Hanger for any piping installation – from a simple water pipe to a high pressure, high temperature steam line.

Not only do correctly engineered hangers save you valuable installation time, but they also provide such definite advantages as • *Easy adjustment during and after pipe erection* • *Full provision for thermal movement where necessary* • *Easy maintenance* • *Compliance with all piping code requirements.*

Don't waste time and take chances with inadequate pipe hangers and supports – let Grinnell supply the exact hangers to meet your needs.

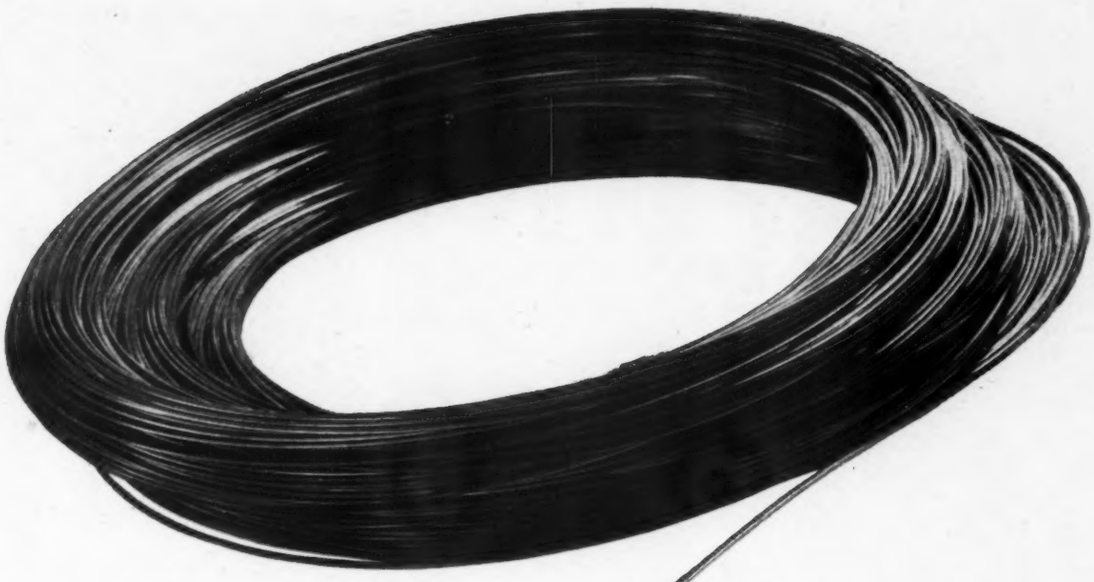
GRINNELL COMPANY, INC.
Executive Offices: Providence 1, R. I.

Branch Warehouses

Atlanta 2, Ga.	Los Angeles 13, Cal.	Providence 1, R. I.
Charlotte 1, N. C.	Minneapolis 15, Minn.	St. Louis 10, Mo.
Chicago 9, Ill.	New York 17, N. Y.	St. Paul, Minn.
Cleveland 14, O.	Oakland 7, Cal.	San Francisco 7, Cal.
Houston 1, Tex.	Philadelphia 34, Pa.	Seattle 1, Wash.

GRINNELL

WHENEVER **PIPING** IS INVOLVED



How to wire for sound business

ABOUT your products. If performance depends in any way upon the behavior of steel wire . . . if the wire's forming or fabrication characteristics have a bearing on cost or production flow . . . then of course it *is* sound business to make sure that the wire you use meets every requirement with *peak* effectiveness.

In this respect the Worcester Wire Works can and will be glad to serve you. For here we have specialized for over 30 years in the development of special-purpose wire . . . in the drawing of small size wire to meet practically every exacting need from armature binding and match book staples to music spring wire and the bead wire upon which your tires depend for long life and safe driving.

So whatever your wire requirements may be, we want you to know that Worcester Wire Works is always ready to give *you* the intelligent, personalized service, the skilled performance in wire, that today helps many and many a manufacturer produce a better product at lower cost.

NS
WORCESTER WIRE WORKS
Division
NATIONAL-STANDARD COMPANY

DIVISIONS OF NATIONAL-STANDARD COMPANY

WORCESTER WIRE WORKS
Worcester, Mass.
Round Steel Wire, Small Sizes

NATIONAL-STANDARD
Niles, Mich.
Tire Wire, Fabricated Braids and Tape

ATHENIA STEEL
Clifton, N. J.
Flat, High Carbon, Cold Rolled Spring Steel

WAGNER LITHO MACHINERY
Jersey City, N. J.
Lithographing and Special Machinery

PREFERRED

Stencil Marked for Prompt Identification.

Illegible addressing causes delays and lost shipments.

Do your shipments receive preferred handling in transit to your customers? Stencil addressed shipments get preferred handling...

Stenciled Shipments Roll Faster!

Why? Common carriers recommend stencil addressing. Stencil addressed shipments are clear–easily read–permanently marked–and eliminate illegibility–labels coming off–speeds delivery–*due to prompt identification in transit.*

Stencil addressed shipments keep your packages out of the carriers' Lost Shipment Warehouse.

DIAGRAPH-BRADLEY

STENCIL MACHINE CORPORATION

ST. LOUIS 8, MISSOURI

DISTRIBUTORS IN PRINCIPAL CITIES–SEE CLASSIFIED SECTION–TELEPHONE DIRECTORY–STENCIL CUTTING MACHINES

D.B.

REG U. S. PAT. OFF.

THE WORLD'S OLDEST AND LARGEST MANUFACTURER OF STENCIL CUTTING MACHINES

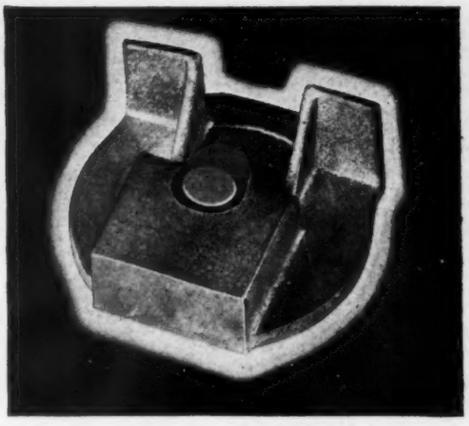
Complete Shipping Room Supplies

Scovill NON-FERROUS FORGINGS

When SCOVILL becomes your METAL-PARTner

PRECISION FORGINGS LIKE THESE MAY PREVENT REJECTIONS OF EXPENSIVELY MACHINED PARTS

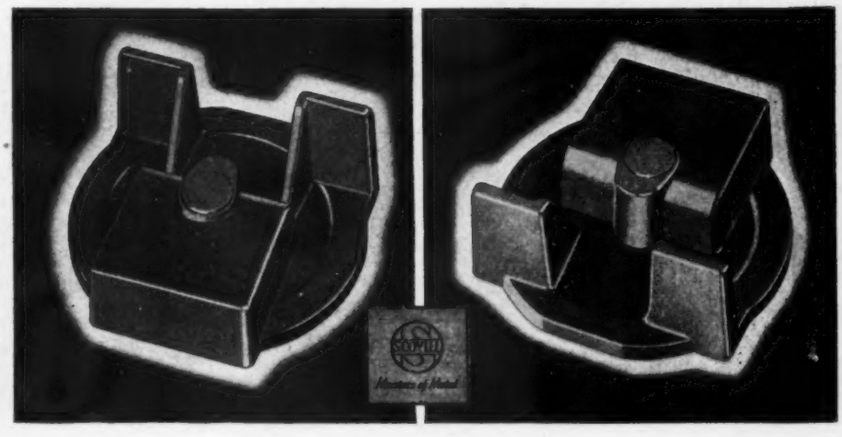
THE PROBLEM: An important component in an air-operated control instrument, this sand casting was unsatisfactory. Although tinned to prevent porosity, there were many rejections due to pressure leaks—but this could be determined only after intricate, costly machining had been completed. Also, the casting's natural surface roughness was unattractive.



GET THE FACTS ON SCOVILL

If the metal parts you're now using are not entirely satisfactory, it may be worth your while to call in Scovill. Long experienced in every phase of non-ferrous forging, and with complete facilities for precision machining, we have solved many complicated problems by carefully considered changes in method or design. With Scovill as *your* METAL PARTner, this broad experience is immediately directed towards getting the improvements you want—in quality, performance or economy. Let us tell you how . . . Fill in the coupon and mail it today. Scovill Manufacturing Company, Waterbury 91, Conn. *Export Department:* 405 Lexington Avenue, New York 17, N. Y.

SCOVILL'S SOLUTION: Although the initial cost is higher than the sand casting it replaces, this Scovill precision forging makes possible over-all savings for the manufacturer. The dense grain structure of the forging eliminates all expensive rejections due to porosity and, at the same time, furnishes a smoother, more attractive finish which improves the appearance of the product . . . A typical example of how Scovill combines improved quality with lowered cost.



Please send me information about your metal-working facilities. I am interested in non-ferrous forgings for the applications checked:

- ☐ Aircraft
- ☐ Automobiles
- ☐ Band Instruments
- ☐ Blow Torches
- ☐ Cameras
- ☐ Communication Equipment
- ☐ Cylinder Valves
- ☐ Fire Extinguishers
- ☐ Household Appliances
- ☐ Industrial Instruments
- ☐ Plumbing Goods
- ☐ Pumps
- ☐ Valves
- ☐ Welding Equipment

Other applications.....

.....

SCOVILL MANUFACTURING COMPANY
Forgings Division
21 Mill Street
Waterbury 91, Connecticut

Name .....

Company .....

Address .....

QUICK CLEAN-UP!

with Thor

WIRE WHEEL BRUSHES

Made for long, heavy duty service in removing rust—paint—scale—burrs —carbon and other material . . . and for cleaning, roughing, polishing and burnishing. THOR wire wheel brushes are available in sizes from 4″ to 12″ diameter in single-unit, arbor hole adaptor or metal-center sectional type. Brush sections are heavily filled with Double-Durable special crimp wire in gauges up to 36. These modern brushes will operate efficiently on portable and stationary equipment with spindle speeds up to 6000 R.P.M. Your nearby Thor Distributor carries a complete stock.

INDEPENDENT PNEUMATIC TOOL COMPANY

600 West Jackson Boulevard, Chicago 6, Illinois

Birmingham Boston Buffalo Cleveland Detroit Los Angeles Milwaukee New York Philadelphia
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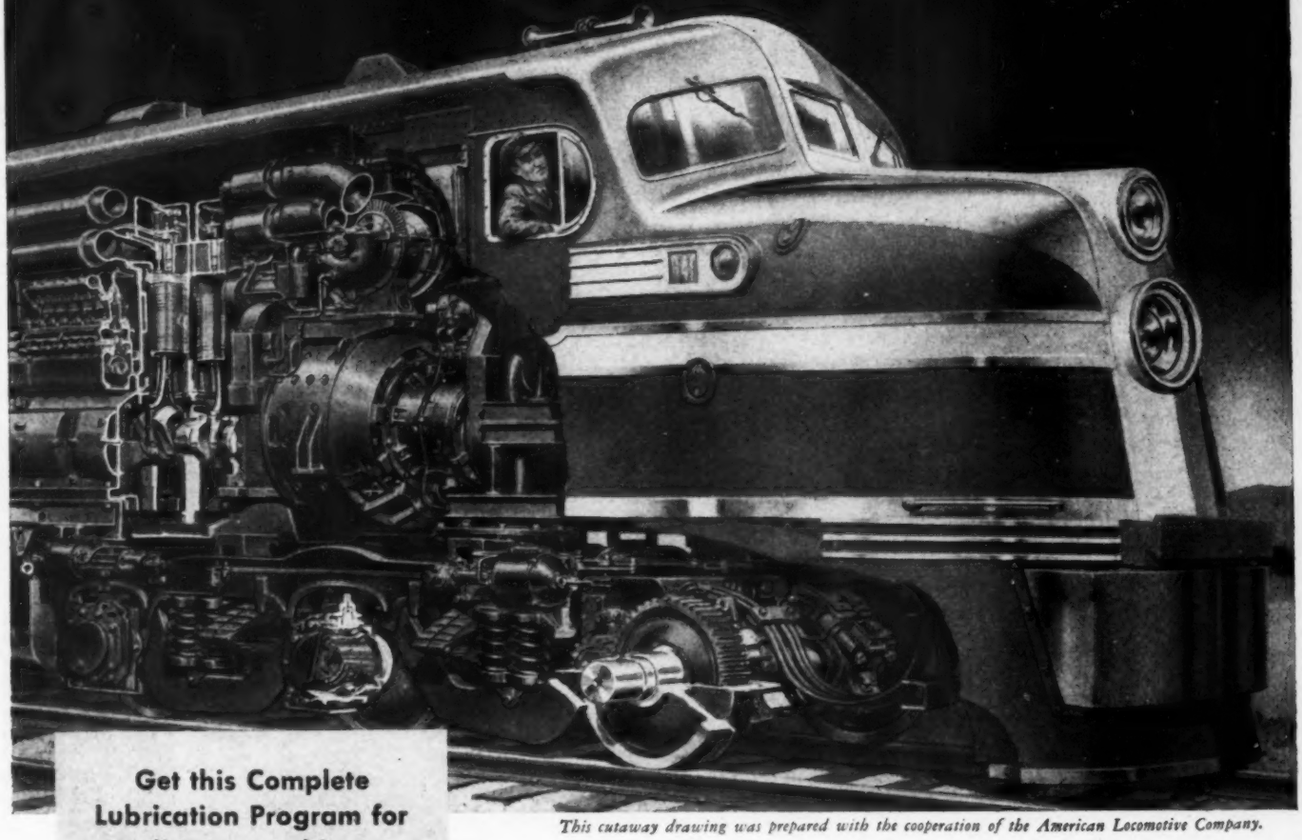
Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

Highballing Power ...and *Profits!*



This cutaway drawing was prepared with the cooperation of the American Locomotive Company.

Get this Complete Lubrication Program for all your machines

- **Lubrication Study of Your Entire Plant**
- **Recommendations to Improve Lubrication**
- **Lubrication Schedules and Controls**
- **Skilled Engineering Counsel**
- **Progress Reports of Benefits Obtained**

GARGOYLE Lubricants

POURING on the power...at high speeds... this big Diesel electric locomotive combines many lubrication problems similar to those in industrial plants.

Here, inside this power-plant-on-wheels, as inside every production machine, Socony-Vacuum's correct lubricants give more continuous operation at lower costs.

In the Diesel, gas temperatures soar to above 3000° F., pressures reach above 600 lb. per sq. in. Socony-Vacuum makes a Diesel oil that stands up under this heat and pressure. The generator, turbo-supercharger, driving gears and journal bearings... all operate under severe conditions. Proved Gargoyle Oils and Greases protect against wear, smooth the way for full power ahead.

Net results are the same for plant owners and railroad operators—greater output and lower costs. Why not get these benefits now and highball your production and profits?

Socony-Vacuum Oil Co., Inc.

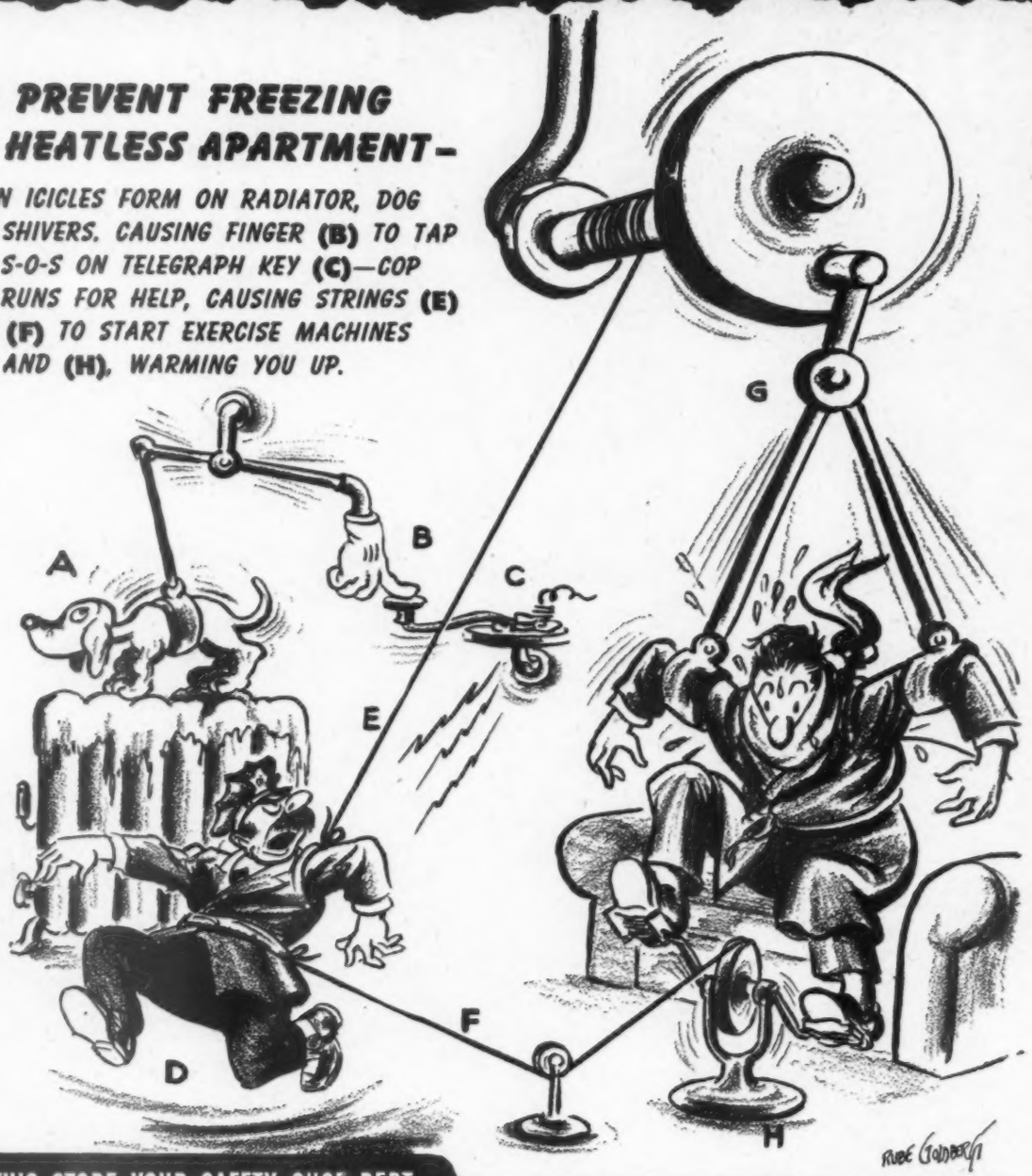
and Affiliates: Magnolia Petroleum Co. · General Petroleum Corp. of Calif.

TUNE IN "THE MOBILGAS PROGRAM"—MONDAY EVENINGS, 9:30 E.S.T.—NBC

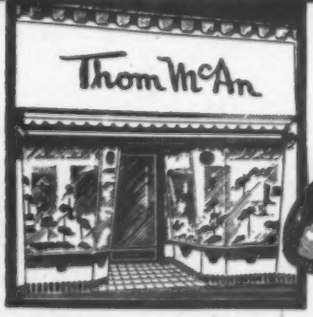
One Way To Do It! — by RUBE GOLDBERG

TO PREVENT FREEZING IN HEATLESS APARTMENT—

WHEN ICICLES FORM ON RADIATOR, DOG (A) SHIVERS, CAUSING FINGER (B) TO TAP OUT S-O-S ON TELEGRAPH KEY (C)—COP (D) RUNS FOR HELP, CAUSING STRINGS (E) AND (F) TO START EXERCISE MACHINES (G) AND (H), WARMING YOU UP.



MAKE THIS STORE YOUR SAFETY SHOE DEPT.



More than 500 stores in over 300 cities.

SAFETY SHOE DIVISION
25 W. 43 ST., NEW YORK 18, N. Y.

ONE WAY to approach the foot safety problem in your plant is to provide Safety Shoes of some brand that your men don't know—or perhaps don't like.

THE EASY WAY is to select Thom McAns, "the Safety Shoes that workers wear WILLINGLY"—because they already know and trust the Thom McAn name.*

THE EASIEST WAY OF ALL—"LET Thom DO IT"
Let us stock our Safety Shoes for you in our own Thom McAn retail stores, fit them with our own trained fitters, without cost or obligation on your part. You, freed of "shoe store problems," can concentrate on more important things, make yourself a more valuable man. Proof? Details? Write for them—today.

*MORE MEN buy their shoes from Thom McAn than from ANY OTHER shoe store organization IN AMERICA

• Those numbers, die-stamped in sample and ingots alike, tie the two inseparably together. The ingots must be held in the casting department until the laboratory's "O.K. to release for rolling" is received.

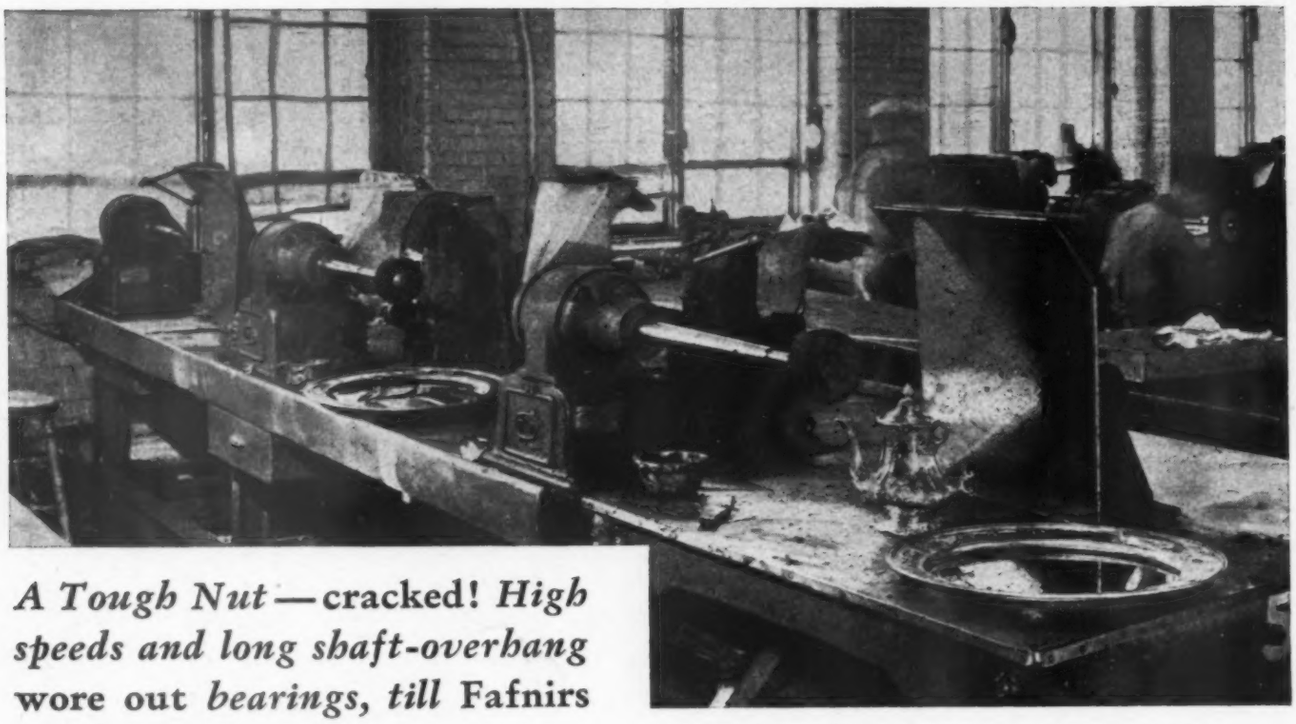
These numbers form a permanent record of the composition and disposition of each ingot. Thus again, Quality Control is at work to assure top quality in the Alcoa Aluminum you purchase.

What characteristics should a material have for best performance?—How give it those properties?—How make certain that the finished product has them? These are questions to which Alcoa's years of developing, producing and working with aluminum alloys have provided the answers.

Quality Control makes certain they are answered correctly at Alcoa. ALUMINUM COMPANY OF AMERICA, 1931 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM

BEARING REPLACEMENTS SLASHED by 97%



A Tough Nut — cracked! *High speeds and long shaft-overhang* wore out *bearings, till* Fafnirs *took over the job* . . . . .

210 Polishing Heads in this plant required bearing replacements every year. Because the buffing units are operated at high speeds, with the tapered shafts of the polishing heads over-hanging the motor housing by two feet, the problem was a particularly tough one.

As a comparative test, half the worn-out bearings were replaced by Fafnirs . . . the others with another make. At the end of a year, replacement requirements had dropped from nearly 100% to less than 30%. This time, Fafnir replacements were used exclusively. When the records were again computed, the yearly replacements had dropped to only 3% – *and not one of the Fafnirs had yet required replacement!*

For cutting friction and stepping up efficiency in hundreds of applications, the correct Fafnir unit provides deep-groove, large-ball load capacity as well as *unequaled ease of installation.* Call your nearby Fafnir distributor. The Fafnir Bearing Company, New Britain, Connecticut.

3-STEP INSTALLATION SAVES TIME AND TROUBLE

1. Slip the shaft through the bearing unit.
2. Engage and turn the collar . . . the bearing is secured to the shaft.
3. Set the screw, to hold collar in locked position.

You'll find it pays to call your INDUSTRIAL SUPPLY DISTRIBUTOR first

MOST COMPLETE LINE IN AMERICA

FAFNIR BALL BEARINGS

Two ways to measure quality in Fluorescent Lamps

1 **One way,** General Electric found, was to build the world's biggest double quartz monochrometer. With this special spectroscope, G-E lamp scientists are able to make thousands of quick and accurate measurements of light waves and of the short ultra-violet radiation that is so important in producing fluorescent light. Those measurements are vital both in fundamental lamp research and in assuring buyers of G-E fluorescent lamps of accurately standardized colors. You'd have fun operating General Electric's monochrometer—but you'd hardly have room for it in your budget or your cellar. Nor would you be inclined to duplicate all of General Electric's other research and testing facilities. But there *is* a measure of fluorescent lamp quality that's always in reach . . . .

2 **Insist on the GE monogram** on all the fluorescent lamps you buy for your business and home. It's easy to understand why General Electric has been first with practically all the major improvements in fluorescent lamps when you realize that G-E Lamp scientists never rest on past achievements. *General Electric lamp research is constantly at work to make General Electric lamps ever better and to make them Stay Brighter Longer.

G-E LAMPS

GENERAL ELECTRIC

INSIDE RIVERSIDE

The excellent distribution facilities in the Riverside area, help us to give our customers giant-stride delivery service.

SUPPORTING a 2-ton roller, vibrating 500 times per minute is no job for weak-muscled metals. In the breast roller section (above) of the Fourdrinier (paper making) machine *Beryllium Copper* "shake springs" must hold an oscillating two-ton roller and do it without buckling, corroding, crystallizing or requiring frequent nursing by the maintenance squad.

Pusey and Jones Corporation, one of the top manufacturers of paper machines, picked Riverside *Beryllium Copper* for shake springs after testing many other materials.

Riverside *Beryllium Copper* has unusually high strength and excellent hardness, extraordinary resistance to wear, fatigue and corrosion.

Get more information about the many advantages of Riverside *Beryllium Copper*, also get data on Riverside's two other alloys, *Nickel Silver* and *Phosphor Bronze* by writing for catalogs of all three.

THE
RIVERSIDE METAL COMPANY
NEW YORK CHICAGO RIVERSIDE • NEW JERSEY HARTFORD CLEVELAND

In Aluminum Paints...

THE VEHICLE MAKES THE DIFFERENCE!

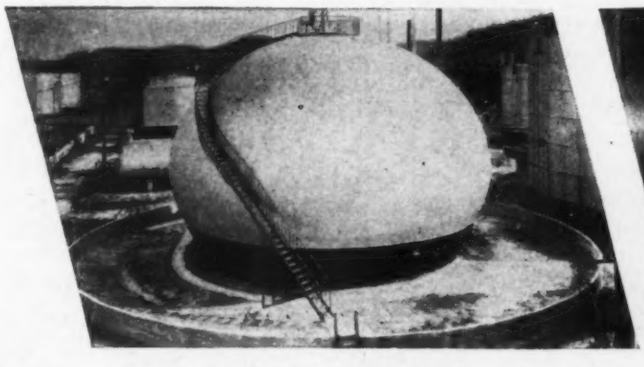
In PERMITE it means...

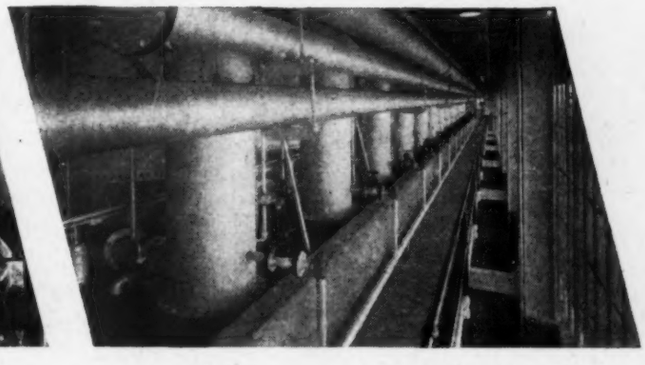
Better Leafing • Greater Brilliance • Extra Durability • Economy

PERMITE ready-mixed, ready-to-use aluminum paints give all surfaces, inside and out, more enduring protection against corrosion and other destructive elements . . . because Permite Paints contain an exclusive, scientifically balanced vehicle of synthetic resins and specially processed oils — blended with 99+% pure aluminum pigment.

Users in every industry have learned to depend upon Permite Aluminum Paint for the better multiple leafing that gives long lasting, high brilliance to their plant structures and equipment. For no other paint has the Permite vehicle! Permite's durability, plus its ready-mixed time-saving form, insures true painting economy. Use Permite for lower maintenance costs. See your Distributor or write us direct.

"Paint Bright with PERMITE"





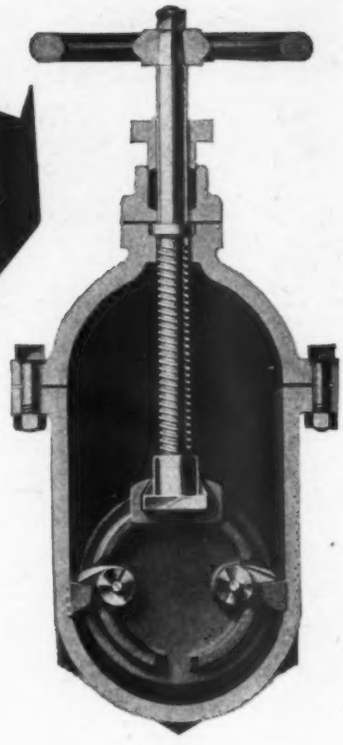
ALUMINUM INDUSTRIES, Inc., CINCINNATI 25, OHIO ***Distributors in Principal Cities***

PERMITE *READY MIXED* ALUMINUM PAINTS

Every feature you want in an

IRON BODY DOUBLE-DISC GATE VALVE

is in this KENNEDY DESIGN



It will pay you to study the operating mechanism of this Kennedy Standard Iron Body Double-Disc Gate Valve.

First notice its simplicity . . . it consists only of two discs, two cams and a stem nut.

When the valve is closing, the cams do not operate until the port opening is completely closed. The lugs on the body then engage with the arms on the cams, causing them to revolve, and forcing the two discs tight against the seats *at the exact moment of closure.*

When opening the valve, the first movement of the stem disengages the arms of the cams from the lugs in the body, immediately releasing the discs.

Then note these additional important advantages . . . location of actuating lugs well above the bottom of the valve to prevent sediment from interfering with correct operation . . . perfect operation with either disc toward the pressure, and with valve in any position . . . interchangeability of both discs and cams, so that mechanism cannot be assembled incorrectly.

This design, together with the many other Kennedy Valve types for all standard requirements, is fully described in the 240-page Kennedy Catalog which will be sent on request.

Buy From Our Distributor

YOU WANT THESE VALVE FEATURES

. . . you'll find them in this KENNEDY design

1. **Generous Strength . . .** Body and bonnet are of high-grade dense metal with ample thickness and rounded fillets. Stem has large diameter and extra large number of contact threads.
2. **Easy Operation . . .** Stem and stem contact surfaces are accurately threaded. Deep stuffing boxes permit tightness without undue pressure on packing. Large handwheel gives firm, comfortable grip.
3. **Lasting Tightness . . .** Discs and seats seat accurately, and their sturdy design resists distortion and has special provisions for take-up of wear.
4. **Long Life . . .** Many Kennedy valves have been in daily use a quarter century and more.
5. **Convenient Repacking . . .** Glands and packing are easily accessible.
6. **Economical Maintenance . . .** Long wear built into all parts, and adjustments or other attention are seldom required.

THE KENNEDY VALVE MFG. CO.
Elmira, New York

KV-135

KENNEDY *valves - pipe fittings - fire hydrants*

SPEED ELECTRICAL CHANGES WITH EASE...

You Can Do It With BullDog BUStribution DUCT

Move a machine . . . relocate a department . . . or revamp an entire factory layout. BUStribution DUCT, BullDog's modern, highly flexible electrical distribution system will meet every changing condition . . . with little or no rewiring.

Prefabricated, standardized BUStribution DUCT systems can be moved, altered and reinstalled with complete re-use of materials . . . they are 100% salvable.

Branch Circuits can be added wherever you need them because BUStribution DUCT and branch circuit fittings are designed for easy interconnection. Also, standard elbows, tees and crosses permit the system to fit any plan. Best of all, simplicity in design makes it possible to alter circuits with minimum demands for time and tools. Look at BUStribution DUCT from any angle and you see savings!

Electrical power systems are closely allied with machine tool layout. Therefore, production changes necessitate shifts in electrical power distribution. That's why it will pay you to investigate BullDog BUStribution DUCT and the advantages of "plug-in" power that is readily adaptable to changing production conditions. Write for details or call a BullDog field engineer. He can show you an installation near your own plant.

BullDog Also Manufactures Vacu-Break Safety Switches—SafToFuse Panelboards—Switchboards—Circuit Master Breakers—Industrial Trol-E-DUCT for Portable Tools, Cranes and Hoists—Universal Trol-E-DUCT for completely flexible lighting.

BULLDOG

ELECTRICAL DISTRIBUTION SYSTEMS

BULLDOG ELECTRIC PRODUCTS COMPANY, BOX 177, R. PK. ANNEX, DETROIT 32, MICHIGAN. In Canada, BullDog Electric Products, Ltd., Toronto. Field Engineering Offices in All Principal Cities

TO hold parts rigidly in place—and to provide for quick, easy adjustment—makers of farm equipment and other machinery manufacturers specify "Ferry Cap Set Screws."

These set screws are case hardened—the hard point *bites in* and *holds.* They fit perfectly and respond readily to adjustment needs.

"Ferry Cap Set Screws" are expertly made by the first company to produce Cup Point Set Screws by the cold upset process of manufacture. They embody the skill and experience gained in 38 years of precision manufacturing.

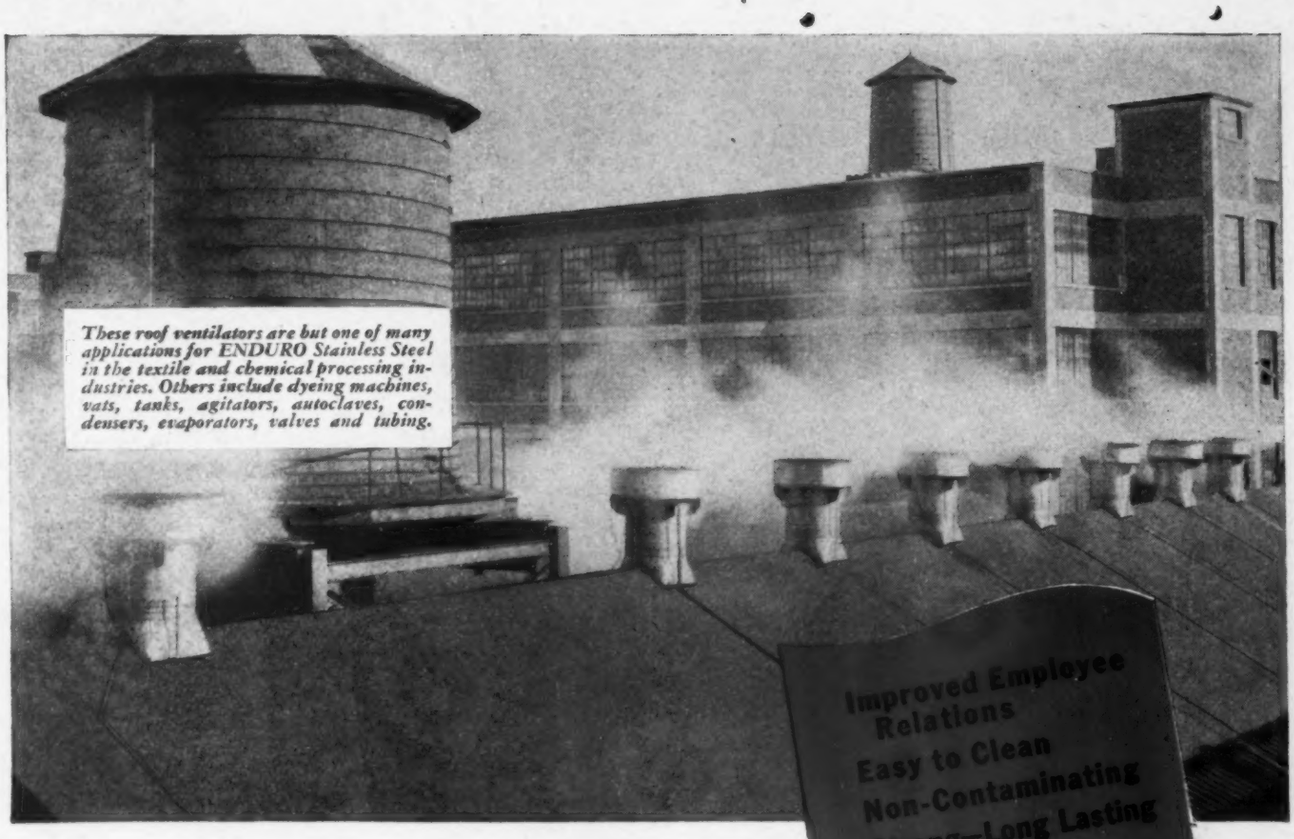
Square head and headless—cup and oval point—case hardened —sizes ¼" diameter and larger. Carried in stock for immediate shipment.

The FERRY CAP & SET SCREW Co.

2165 SCRANTON ROAD Dept. A-14 CLEVELAND 13, OHIO

EXPORT MANAGER: ERNEST W. LENZ, 280 BROADWAY, NEW YORK 7, N. Y.

CAP AND SET SCREWS • CONNECTING ROD BOLTS • MAIN BEARING BOLTS • SPRING BOLTS AND SHACKLE BOLTS • HARDENED AND GROUND BOLTS • SPECIAL ALLOY STEEL SCREWS • VALVE TAPPET ADJUSTING SCREWS • AIRCRAFT ENGINE STUDS • ALLOY STEEL AND COMMERCIAL STUDS • FERRY PATENTED ACORN NUTS


These roof ventilators are but one of many applications for ENDURO Stainless Steel in the textile and chemical processing industries. Others include dyeing machines, vats, tanks, agitators, autoclaves, condensers, evaporators, valves and tubing.
Improved Employee Relations
Easy to Clean
Non-Contaminating
Strong—Long Lasting
Resistant to Rust and Corrosion
Resistant to Heat
Easy to Fabricate
Universal Acceptance
Low Ultimate Cost

Enduro Pays in many ways

Among the major reasons why Republic ENDURO Stainless Steel is a "natural" material for chemical and textile processing applications is its inherently high resistance to rust and corrosion.

Consider the case of these textile dyeshop roof ventilators. When made of ordinary steel, the high cost of replacing corroded ventilators every six months was dwarfed by the costly annoyance of rusty drippings which contaminated dyes and damaged materials.

After they were made of long-lasting ENDURO, however, these ventilators ceased being a source of constant maintenance and replacement expense. Rusty drippings were ended.

Perhaps you, too, have applications in which this and other ENDURO advantages effectively can reduce operating overhead. Talk to your equipment manufacturer, or write us for complete information:

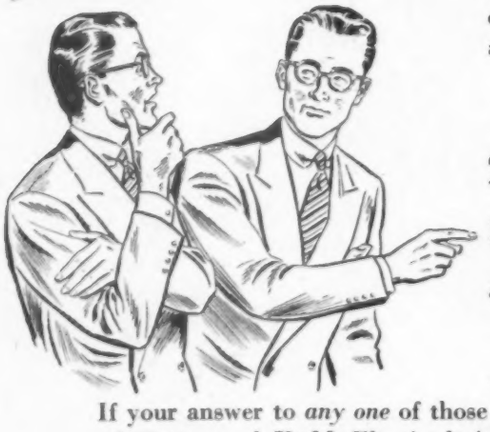
REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES: CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, New York

Republic
ENDURO STAINLESS STEEL
Reg. U. S. Pat. Off.

Other Republic Products include Carbon and Alloy Steels—Pipe, Sheets, Bolts and Nuts, Tin Plate, Tubing, Stevens Barrels and Drums

Ask yourself these 4 questions about the mounting materials in your plant

Panels, switchboards and other electrical apparatus mountings are key factors of an electrical power system. Are yours sufficiently up-to-the-minute to meet present-day needs? To find out, ask yourself these four questions:



1. **Are they proof against moisture and oil absorption?**
2. **Can they stand frequent high-voltage surges?**
3. **Will they withstand vibration, or temperature changes?**
4. **Are they in perfect condition — without cracks and unwarped?**

If your answer to *any one* of those questions is "no", it's time to investigate the advantages of K&M Ebonized Asbestos . . . for Ebonized Asbestos is a high-dielectric panelling material that gives a positive "yes" to each of those queries. A tough, all enduring combination of asbestos, cement and an insulating compound, Ebonized Asbestos is ideal for modern electrical work, according to fabricators who work it, and plants that use it. When built into assembled units, it meets the technical requirements of Underwriters' Laboratories, Inc. Write us for full particulars about Ebonized Asbestos.

Nature Made Asbestos . . .

Keasbey & Mattison has been making it serve mankind since 1873

KEASBEY & MATTISON

COMPANY • AMBLER • PENNSYLVANIA

General Chemical Research Presents

genetron* 101

—second in its new series of ALIPHATIC ORGANIC FLUORINE COMPOUNDS

Out of General Chemical's extensive fluorine research program in the field of organic chemistry comes *Genetron 101* . . . the second in a series of important aliphatic organic fluorine compounds.

This chlorinated derivative of ethylidine fluoride has a lower melting point and lower vapor pressures than the parent compound. Many of its applications are already under investigation by far-sighted manufacturers who recognize the industrial potentialities of *Genetron 101:* as a refrigerant . . . an aerosol dispersant in admixture with other Genetrons . . . a selective solvent . . . a dielectric . . . and as an intermediate in the preparation of various other organic chemicals.

The physical data here may suggest uses for this low boiling organic liquid which also merit your prompt investigation. For experimental samples, write General Chemical Company, Fluorine Division, 40 Rector Street, New York 6, N. Y.

*Trade Mark, General Chemical Company

genetron* 101
PHYSICAL PROPERTIES

Formula	$CH_3 \cdot CClF_2$
Molecular Weight	101.51
Color	Colorless
Melting Point	—130.8° C
Boiling Point	—9.2° C
Density	1.194 at —10° C
Latent heat of vaporization	96 B.t.u./lb.

Vapor pressure (p.s.i. abs.):

—30° C	6.0
—10° C	14.7
10° C	31.2
30° C	59.0

BASIC CHEMICALS
GENERAL CHEMICAL COMPANY
FOR AMERICAN INDUSTRY

GENERAL CHEMICAL COMPANY
40 RECTOR STREET, NEW YORK 6, N. Y.

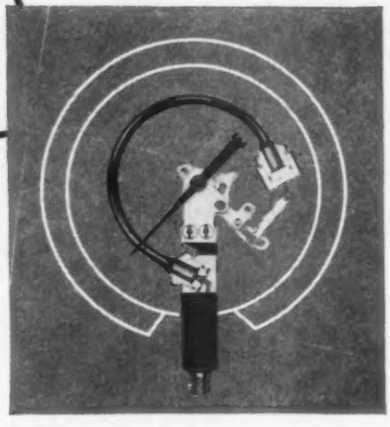
Sales and Technical Service Offices: Albany • Atlanta • Baltimore • Birmingham • Boston Bridgeport • Buffalo • Charlotte • Chicago • Cleveland • Denver • Detroit • Houston Kansas City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh Providence • San Francisco • Seattle • St. Louis • Wenatchee and Yakima (Wash.)
In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.
In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

Modern Design . . . . with old time ruggedness

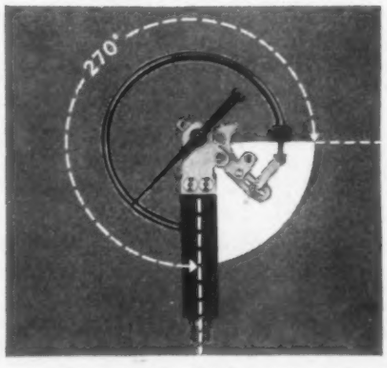
THERE is a wrong way and a right way to design equipment. The wrong way seeks the means of skimping materials and cutting costs. The right way searches for every means of improving performance and lengthening service life. This is the Marsh way.

All the "know-how" acquired in more than three-quarters of a century of instrument making is reflected in the design of Marsh Gauges. A few outstanding elements are illustrated here—the Marsh unit construction; the 270° bourdon tube; the "Recalibrator". And you will find this design know-how carries into every detail of Marsh Gauges from socket to dial.

Marsh design means attractive cases, clear legible dials, ingenious, practical working parts. As executed in quality materials, it means lasting accuracy.

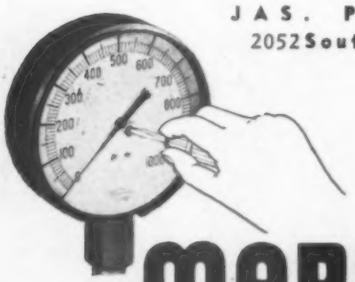


The working unit of Marsh Gauges—bourdon tube, dial, movement, and pointer—are assembled on the socket or bottom piece, the case merely serving as an enclosure as shown by the white lines. As a result, external shocks are not transmitted to vital parts—one of many reasons for lasting accuracy.



Even graduations make Marsh dials highly legible. These even graduations are made possible by the 270° bourdon tube—a design that brings the travel and direction of tube movement into such relationship to the linkage that each unit of pressure causes exactly proportional pointer movement.

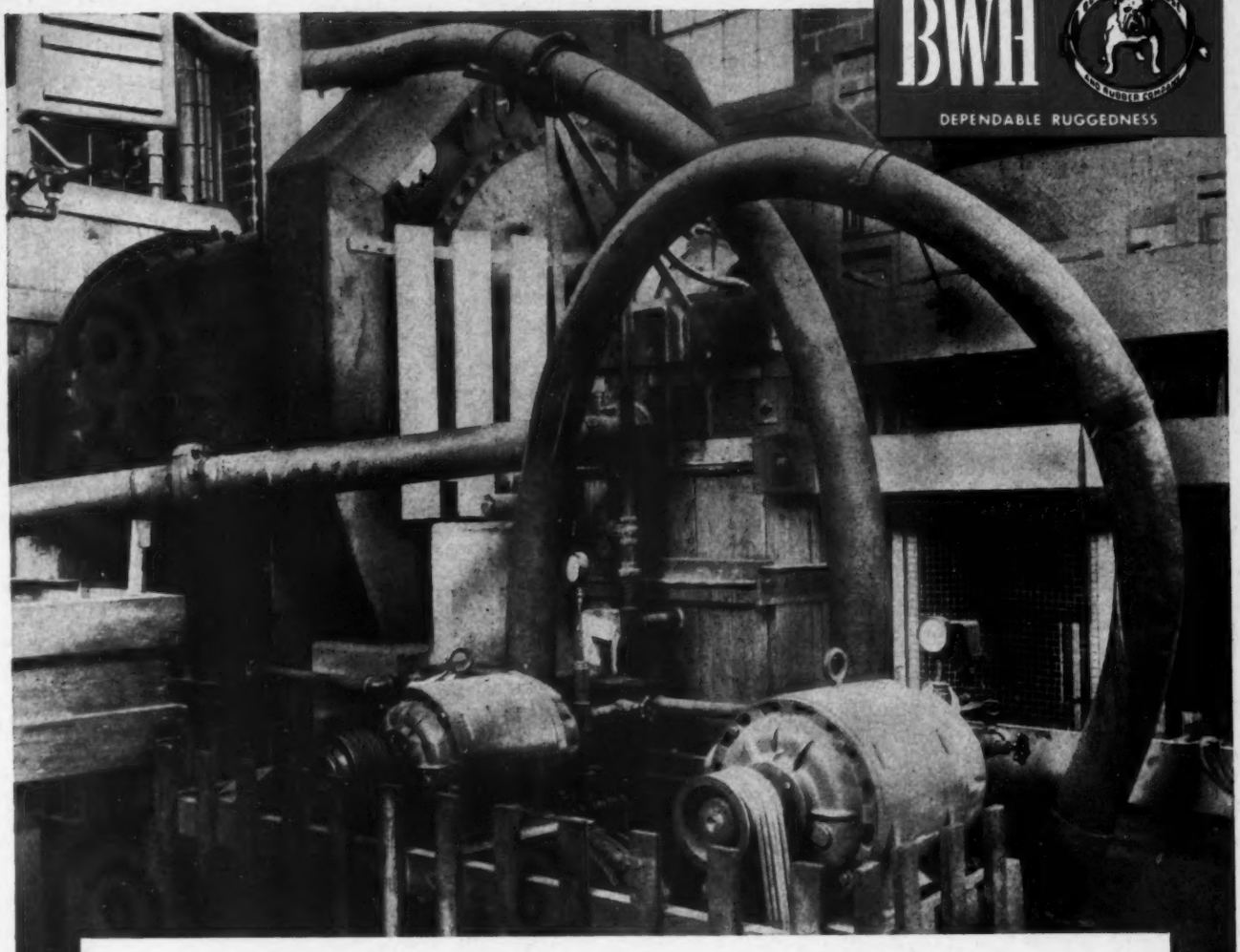
JAS. P. MARSH CORPORATION
2052 Southport Avenue, Chicago 14, Illinois
Export Dept.: 155 E. 44th St., New York 17, N. Y.



No story of Marsh design would be complete without the "Recalibrator" — best way ever devised to correct a gauge that has been knocked out of adjustment.

MARSH GAUGES

"THE STANDARD OF ACCURACY"



BWH

DEPENDABLE RUGGEDNESS

ROUGH CUSTOMER HANDLED SMOOTHLY BY

BWH ORE-HANDLING HOSE

To refine magnetite, it must be run through a series of hoppers that separate the ore from the waste sand. Carrying this heavy, highly abrasive ore to and from the hoppers requires hose that is highly flexible and has amazing durability. BWH solved the problem for a leading foundry with Bull Dog Ore Handling Hose.

This sturdy hose has multiple plies of heavy duck wound over a strong, one-inch-thick rubber lining. Beneath the two outer plies is a high tensile spiral wire imbedded in rubber. Spaced to give the hose maximum flexibility, the wire also adds strength and prevents kinking. Finally, a high-grade, wear-resistant protective rubber cover encloses tube and fabric. Fittings are of the outside sleeve type; thus no metal comes in contact with the abrasive ore . . . and service of the hose is indefinitely prolonged.

When you require this or other types of industrial rubber goods, look to BWH for dependable ruggedness . . . BWH distributors for dependable service.

HAVE YOU A JOB WHERE STAMINA COUNTS?

Bring us your toughest problems . . . we're specialists in solving them. Consult your nearby BWH distributor, or write direct to BWH.

BOSTON WOVEN HOSE & RUBBER COMPANY

Distributors in All Principal Cities

WORKS: CAMBRIDGE, MASS.. U. S. A. • P. O. BOX 1071, BOSTON 3, MASS.

A smart pipe vise and workbench

Easily set up

where you need it

RIDGID

Portable

TRISTAND

● It makes sense that this efficient Tristand, practically a portable workbench, becomes more popular by the month. Hinged legs fold in for easy carrying to the job. It sets up solid against tipping. Ample room on top, slots for tools, a pipe rest and three handy pipe benders . . . remarkably convenient. Comes with chain or yoke pipe vise, LonGrip jaws easy on polished pipe. Strong malleable construction, years of easier pipe work. Ask your Supply House for the RIDGID Tristand.

Tristand made also with yoke vise.

Less Work More Speed

threading 1" to 2" pipe with this No. 1R poster

RIDGID

Has the famous RIDGID quick-setting workholder

● This improved No. 1R gives you pipe threading speed and convenience you're not used to finding in a 1" to 2" poster die stock. Mistake-proof workholder sets to size quickly, only 1 screw to tighten on pipe . . . no bushings to bother with. Direct action threading, no wobble—full-floating posts only taper threads. Fast smooth-threading alloy or high-speed steel dies, rugged steel-and-malleable construction for long use. Popular price—ask your Supply House.

It stands up anywhere on its own feet.

Millions of RIDGID Tools in use

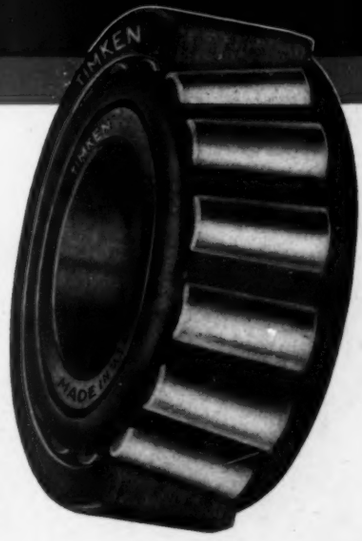
★ RIDGID ★

WORK-SAVER PIPE TOOLS

The Ridge Tool Company
Elyria, Ohio, U. S. A.

INDUSTRY MOVES ON

TIMKEN ROLLER BEARINGS



EXCLUSIVE!

The Timken Roller Bearing Company has a broad background of bearing engineering and metallurgical experience, coupled with nearly 50 years of "know-how". There is no possible substitute for this vast accumulation of knowledge which goes right back to the very beginning of the application of roller bearings to mechanical equipment.

Our modern American industrial economy is founded in great measure on the black magic that we know as coal. For every ton of steel — a ton of coal is required in its making. More than 62% of our electricity is generated from coal. From coal are derived plastics, paints, roofing materials, medicines, insecticides, perfumes — and thousands of other products. Over 1,000 mine operators use over 500,000 mine cars equipped with Timken Bearings — a total greater than are equipped with all other types of anti-friction bearings combined. Timken Bearings are standard equipment too in all other types of mechanized mining machinery. Users know it pays to insist on Timken Bearings when buying mine cars — automotive vehicles — railroad rolling stock — machine tools — tractors — oil field equipment or any type of industrial equipment. The trade-mark "TIMKEN" is your assurance of dependable performance. The Timken Roller Bearing Company, Canton 6, Ohio.

Tapered Roller
TIMKEN BEARING
EQUIPPED

"All There Is In Bearings"

TIMKEN BEARINGS, TIMKEN ALLOY STEELS AND TUBING AND TIMKEN REMOVABLE ROCK BITS

CHASE LINERS

* Stop Liner Breakage!
* Stretch in All Directions!

Chase Liners are better, more resilient, more flexible! Here's why: they're crinkled for vertical elasticity *and* pleated for horizontal elasticity! Result: no more broken liners nor costly damage to contents due to liner failure or breakage.

Check on Chase Liners today. They're the crinkled and pleated liners that assure savings . . . that actually cost no more!

CHASE BAG CO.

GENERAL SALES OFFICES
307 WEST JACKSON BLVD., CHICAGO 6, ILL.

BOISE • DALLAS • TOLEDO • DENVER • DETROIT • MINNEAPOLIS ST. LOUIS • NEW YORK • CLEVELAND • MILWAUKEE • PITTSBURGH BUFFALO • KANSAS CITY • MEMPHIS • GOSHEN, IND. • PHILADELPHIA NEW ORLEANS • ORLANDO, FLA. • SALT LAKE CITY • OKLAHOMA CITY • PORTLAND, ORE. • REIDSVILLE, N. C. • HARLINGEN, TEXAS CHAGRIN FALLS, O. • HUTCHINSON, KAN. • WINTER HAVEN, FLA.

F.O.B. filosofy of buying

WHAT ARE today's most significant purchasing problems? The Educational Committee of the Washington Association polled the members of that organization recently as a guide to formulating its forum programs, with the following results, in order of the preference indicated. (The first two subjects were tied on the ballots.)

1. Price Trends and Escalator Clauses.
1. Expediting and Delivery Problems.
3. Warehouse and Inventory Control.
4. Legal Phases of Purchasing.
5. Commodity Terminology and Specifications.
6. Traffic Management.
7. Letter Writing.
8. Reciprocity.
9. Government Regulations.
10. Insurance.

Time was, and not so very long ago, when Subject 9 would have headed any list, but the Washington factor is rapidly receding into the more remote perspective.

• •

RECOGNITION comes in curious ways. When Thomas J. Harper recently completed his fiftieth year of service as Purchasing Agent of the Stonewall (Mississippi) Cotton Mills, his friends and associates gave him a party at nearby Meridian to celebrate the occasion. Highlight of the affair was when Mayor Frank Jacobs appointed Harper honorary Chief of Police of the city.

• •

MORE TO THE POINT is the selection of Joseph H. Saville, Division Purchasing Agent of the American Viscose Corp., Wilmington, Delaware, as the recipient of the Salvage Award medal and citation at a recent dinner meeting in New York City. This award hasn't anything to do with industrial salvage operations, being named in honor of Sir Samuel A. Salvage, founder of the United States rayon industry. Significant feature of the event is that the recommendation for the award came from plant personnel "who appreciated his anticipation of their manufacturing needs, and who recognize in him a fine example of purchasing service." Mr. Saville's citation was "For conspicuous achievement and loyalty, particularly in respect to his outstanding assistance to the plants in maintaining a supply of raw materials under difficult war conditions."

• •

A GOOD DEAL of emphasis is now being placed on what people outside the purchasing department think of purchasing men and the job they are doing. We are therefore much interested in reading an advertisement of the New York *Times* — one of a series in which they present characterizations of typical readers. And here is what they have to say: *"He is a purchasing agent, a man hard to sell. When he buys a product or a service, he always looks for perfection."*

• •

WE HAVE a complaint from Ed Scully, whose excellent article on job evaluation in the purchasing department appeared in our September issue. He didn't know what he was letting himself in for when he sent that manuscript. Within five weeks of the publication date, he received upwards of a hundred and forty letters requesting further information on specific points in the article, and finds himself practically in the management consulting business.

• •

THIS leads us to comment on the fact that Bill Kerrick's story, "If I Were a Salesman", from our May issue, has gone into its third reprint edition, and the extra distribution in this form is well up into five figures, plus a couple of reprintings in house organs and sales bulletins. And the correspondence on Ralph Keefer's September editorial "Engineers Are OK" is still gaining momentum, with several hundred reprints sent out on individual request. We are moved to make this

report because a highly reputable business survey service recently expressed the opinion that business men generally are not reading as much nor as avidly as they did a year or so ago. Purchasing agents, at least, are still eager to learn.

• •

WE MISSED it, too—the subtle signature that Mr. Keefer wove into the title of his article. If that title had been set up as "Engineers R. O. K." it would have revealed the initials of the author. This cipher doesn't prove that Lord Bacon wrote Shakespeare's plays, but it is a pleasant conceit. Mr. Keefer's ideas, too, R. O. K.

• •

IN LAST MONTH'S column, we cited some of the mottoes observed in purchasing offices. Add to this collection the following, found at the desk of a harried member of the profession in Trenton, New Jersey:

Don't Go Away Mad
. . . Just Go Away

Perhaps you have—or have seen—other pithy slogans that ought to be passed along to fellow purchasing men.

• •

THERE is always a special satisfaction in learning of cases where editorial material of bygone years has been found to have lasting value and is put to continuing use. Recent instances: Our series of "Pen Points on Purchase Law" (1938-1941) is now being incorporated in the new purchasing manual of the U. S. Maritime Commission; and that hardy perennial "Basic Principles of Purchasing" (1942-1943) goes to work for Procurement Director Ming-Chai Lu of the Chinese National Resources Commission.

• •

CREDIT an assist to Bob Hannegan's resourceful mail sorters, who recently delivered to this office a letter addressed to:

Monsieur PURSACHING
New York 17
Etats Unis

Yes, that's us. The letter was a communication from our colleague, *Le Redacteur en Chef, L'Administration Moderne, Revue mensuelle pour l'Etude de l'Organisation et des Techniques Administratives, 10 Rue du Faubourg Montmartre, Paris IXe.*

one source of supply
one mark...dependability
one aim...satisfaction

25 YEARS OF STEADFAST SERVICE TO BUYERS OF BOLTS, NUTS, SCREWS, RIVETS, WASHERS

25th Anniversary 1921-1946

STERLING BOLT COMPANY
213 W. JACKSON BLVD. • CHICAGO 6, ILLINOIS
MILWAUKEE—161 WISCONSIN AVE. • CINCINNATI—UNION TRUST BUILDING

STILL LOOKING INTO THE FUTURE

YESTERDAY...

wirebrushing was tops

Yes . . . yesterday wirebrushing structural steel to prepare a base for shop coats was the method preferred by steel fabricators. But it had its drawbacks: It was costly . . . slow . . . primer coats cracked and lifted, and had to be replaced at frequent intervals.

TODAY...

it's flame cleaning and dehydrating!

Now, better bases for protective coatings on structural steel are prepared rapidly by this modern oxyacetylene process which slashes costs more than 75%. Developed by Airco in cooperation with a large steel fabricator, flame cleaning and dehydrating completely frees the surface of rust and scale . . . drives out all hidden moisture and produces a dry and warm surface from which primer coats will not crack and lift.

AND TOMORROW...?

You can look ahead to new and even more important developments to aid the metal working industry — thanks to Airco's accelerated research and development program.

The facilities of our Technical Sales Division are available to all metal working men in applying Airco processes in the solution of their problems. For additional information, get in touch with your nearest Airco office or write: Air Reduction, 60 E. 42nd St., New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas.

AIRCO **AIR REDUCTION**

Offices in All Principal Cities

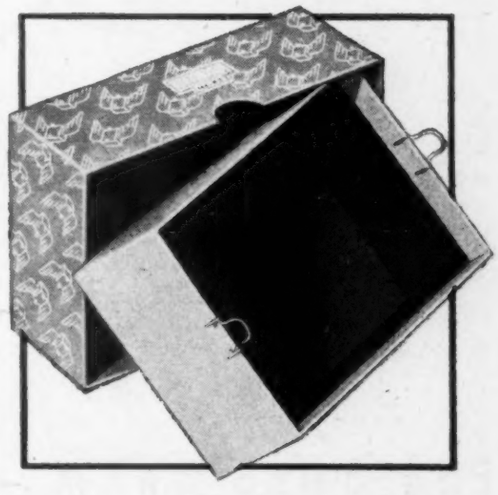
ORIGINATORS OF MODERN OXYACETYLENE METHODS FOR THE METAL WORKING INDUSTRY

America's number one package . . .

ON LAND: For small parts packaging, the Mason MailMaster is the leading container for speedy, convenient, strong packaging.

AT SEA: For export packaging, the Mason MailMaster, because of its light weight, basic strength and patented closure, is America's number one export package — ably demonstrated by the millions which have been used during the war for packaging vital overseas supplies.

IN THE AIR: Seventeen years ago the Mason MailMaster was, as it is today, the number one air mail package. Pioneered for light weight and maximum strength, the Mason MailMaster leads the field in air transportation packaging. Write for new catalog showing the entire line of Mason MailMasters, Dept. , The Mason Box Company, Attleboro Falls, Mass., 175 Fifth Ave., New York.



The NEW Mason MailMaster designed for the Age of Flight. Light and strong, with positive wire closure.

The MASON BOX COMPANY

MANUFACTURERS OF AMERICA'S NUMBER ONE BOX . . . THE MASON MAILMASTER

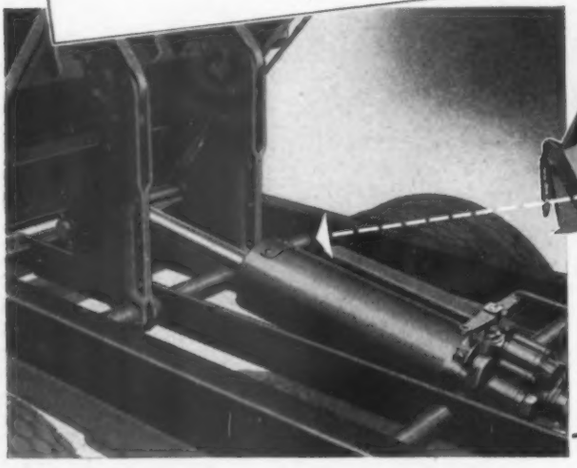
Problem ~~TROUBLE~~-SHOOTING *with* SEAMLESS STEEL TUBING

Disposing of a Design Dilemma

DUMP TRUCK INDUSTRY

The Problem: To provide solid support for hoist cylinder and arms, without increasing the weight of the assembly.

The Answer: OSTUCO Seamless Steel Tubing, light enough to meet design requirements, yet capable of withstanding the strains and loads to which it will be subjected.



PHOTOS COURTESY OF THE GALION ALLSTEEL BODY CO.

The heavy loads and severe stresses to which a dump truck hoist is constantly subjected calls for sound design and precise manufacture of hoist supports, through which the weight and stresses are distributed throughout the entire frame and chassis. OSTUCO Seamless Steel Tubing, inherently strong and lightweight, used in the hubs of the hoist supports, helped solve this difficult design problem.

OSTUCO tubing has helped solve design and production problems in a host of industries . . . it may well be the answer to *your* problem. OSTUCO'S experienced engineering, skilled craftsmanship* and on-time delivery record are available to manufacturers. Your copy of "M-1", a valuable booklet on steel analyses, tolerances and machining methods will be mailed on request.

**The OSTUCO tradition of quality manufacture is as old as the history of tube-making itself. Charles Sharkey, Bench Room Foreman and member of the OSTUCO 50-year Club, is one of many veterans who have spent a lifetime maintaining that tradition.*

THE OHIO SEAMLESS TUBE COMPANY

SALES OFFICES: Chicago 6, Illinois, Civic Opera Bldg., 20 North Wacker Dr.; Cleveland 14, Ohio, 1328 Citizens' Bldg.; Detroit 2, Michigan, 2857 E. Grand Blvd.; Houston 2, Texas, 927 A M & M Bldg.; Los Angeles, Calif., Suite 200-170 So. Beverly Drive, Beverly Hills, California; Moline, Illinois, 225 Fifth Avenue Bldg.; New York 17, New York, 70 East 45th Street; Philadelphia 9, Pa., 123 S. Broad St.; St. Louis 6, Missouri, 1230 North Main St.; Seattle, Washington, 1911 Smith Tower; Syracuse, New York, 501 Roberts Ave.; Tulsa 3, Oklahoma, Refining Engine & Equipment Co., 604 Ten E. 4th St. Bldg.

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SHELBY OSTUCO OHIO

Plant and Main Office
SHELBY, OHIO

MANUFACTURERS OF SEAMLESS AND ELECTRIC-WELD STEEL TUBING

GLASS PLANT ELIMINATES *Costly* SHUTDOWNS

RUGGEDLY BUILT DAYTON V-BELT DRIVES

Operate efficiently in snow, rain, heat, cold, dust and dirt

Power drives, located outside, operate the 72-inch fans that cool glass furnaces in the plant of a large manufacturer of commercial and chemical glassware. These drives are subject to rapidly changing weather conditions. Original belts on the drives couldn't take it, broke with disturbing frequency which resulted in improper cooling, causing severe damage to furnaces, damage that was expensive to repair and caused serious interruptions in production schedules. Six years ago Dayton V-Belts were tried on one of the drives. They could and did take it! For six years no shutdown has been experienced due to belt failure. Now all fan drives are Dayton V-Belt equipped. Dayton V-Belts can take it because their stronger, more compact Daytex Cord provides extra strength and the especially compounded materials provide high resistance to the toughest operating conditions. They are the result of over 40 years of research and manufacturing experience working with natural and synthetic rubber. It is experience that can help you solve your power transmission drive problems. Write today to The Dayton Rubber Manufacturing Company, Dayton 1, Ohio.

ATTENTION

Power Transmission Engineers

There is a mill supply house near you that stocks Dayton V-Belts. A representative will gladly discuss your power transmission drive problems with you. Look for the name under the trade name heading "Dayton V-Belts" in the yellow pages of your telephone book.

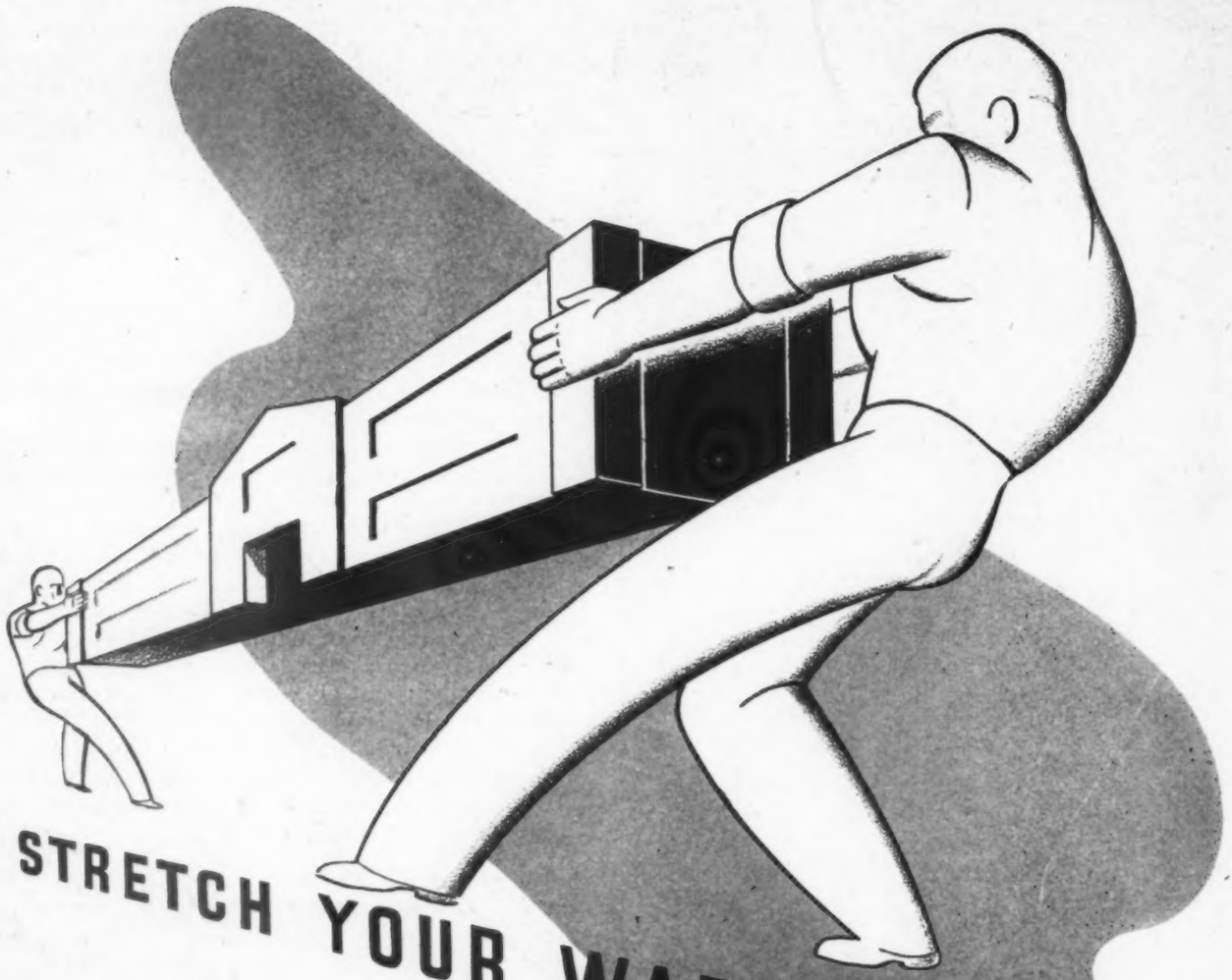
SEND FOR YOUR COPY OF THIS DAYTON CATALOG

With a Dayton No. 280 Catalog you can quickly and easily select the correct V-Belt Drive for any power transmission need. Your copy is free. Write for it today. The Dayton Rubber Manufacturing Company, Dayton 1, Ohio.

Dayton Rubber

THE MARK OF TECHNICAL EXCELLENCE IN SYNTHETIC RUBBER

THE WORLD'S LARGEST MANUFACTURER OF V-BELTS



STRETCH YOUR WAREHOUSE

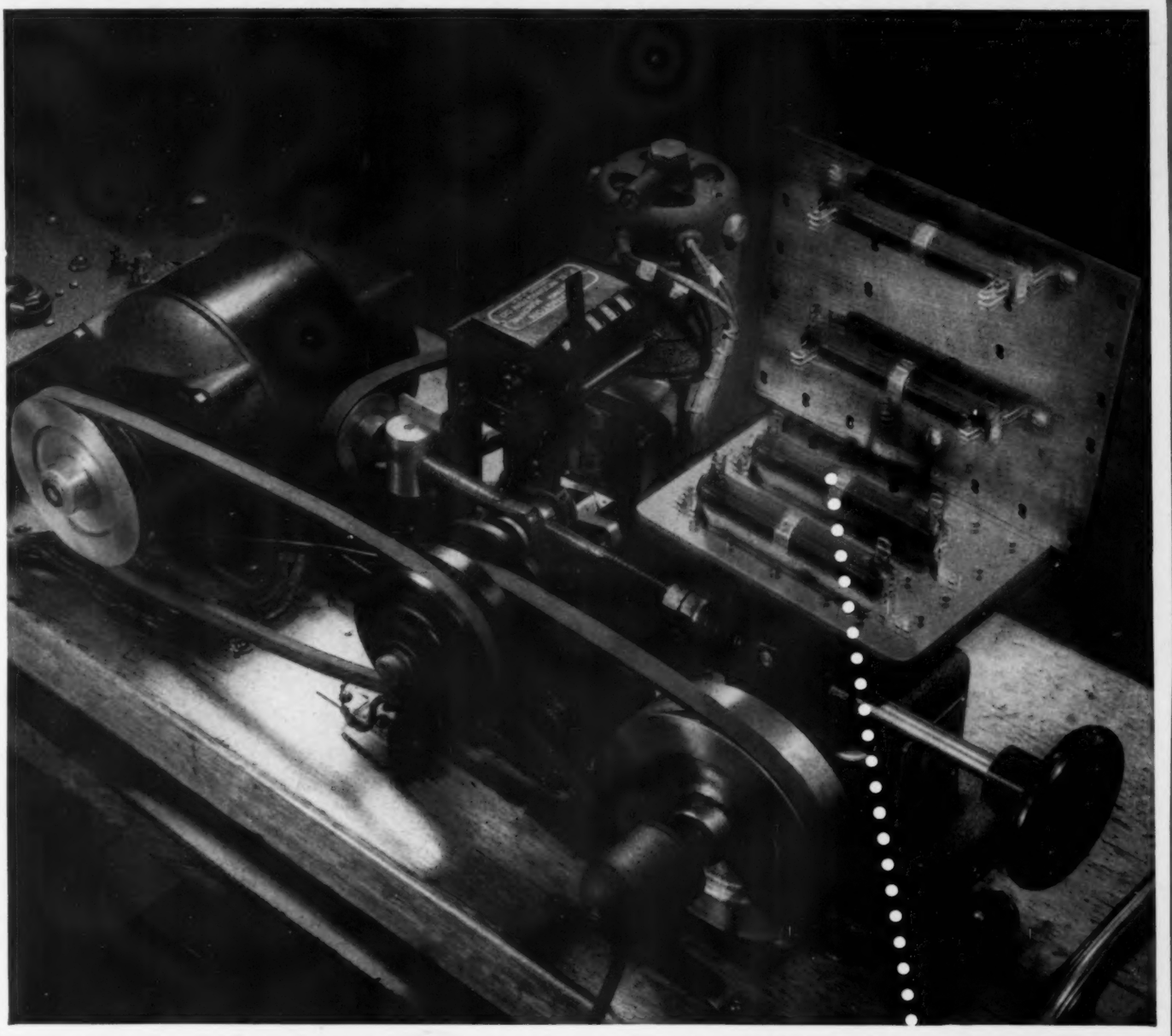
If you, like so many others today, are cramped for warehouse space, it's time you learned about SUPERSTRONGS.

SUPERSTRONG boxes—"Bound with Steel"—come to you in flat form, so that they occupy less than one-sixth of the space normally required. The resultant saving provides that warehouse space you need so badly—and just can't find.

Let us tell you how SUPERSTRONGS can more effectively handle your future requirements.

SHIPPING TRADE MARK SUPERSTRONG CONTAINERS
REG. U.S. PAT. OFF.

RATHBORNE, HAIR AND RIDGWAY COMPANY
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS



A Vicious Vibration Test that Shakes Out the "Bugs"

On this vibrating table . . . throbbing 600 to 3,300 times a minute . . . Ohmite resistors are exposed to vibrations many times more punishing than those encountered on industrial machines, planes, automotive vehicles, railroads, and marine craft. First at the lower rate, then at a rate gradually increased to 3,300 vibrations per minute, these standard production-run Ohmite resistors and their resilient mounting brackets prove their ability to stand up for prolonged periods under terrific abuse. When you specify Ohmite resistors you can be sure of years of unfailing dependability—under practically any service.

Be Right with

OHMITE

RHEOSTATS • RESISTORS • TAP SWITCHES

Sealed in Vitreous Enamel for Life-Time Protection

RESISTS SHOCK,
VIBRATION, COLD, HEAT, FUMES
OR HUMIDITY

1 VITREOUS ENAMEL COVERING Special Ohmite vitreous enamel holds the winding rigidly in place and protects it from mechanical damage.

2 STRONG CERAMIC CORE Provides a strong base for the winding, unaffected by cold, heat, fumes, or high humidity.

3 EVEN, UNIFORM WINDING The unsurpassed uniformity of the resistance winding prevents "hot spots" and resultant failures.

4 TINNED COPPER TERMINALS Terminal lugs are tin-dipped for ease in soldering. The resistance wire is both mechanically locked and brazed to the terminal lugs, assuring a perfect electrical connection.

5 RESILIENT MOUNTING BRACKETS Mounting brackets hold the resistor firmly yet resiliently in place. They are simple to mount and can be easily removed by a slight upward pressure at the base.

6 RATING STAMPED ON METAL BAND Each resistor has a metal band upon which the resistance is stamped for clear and permanent identification.

OHMITE MANUFACTURING COMPANY — 4902 Flournoy St., Chicago 44, U.S.A.

Send for Catalog and Engineering Manual No. 40

Write now, on your company letterhead, for your copy of this valuable 96-page Ohmite catalog.

Could you use Magnesium Castings at equal or less cost?

The above illustration shows a few of the Magnesium Castings made by Utica Radiator and gives an idea of the different sizes, variety and shapes that are possible.

Due to the excellent machining qualities of Magnesium, finished Magnesium castings often cost less than the more common cast metals, even though the cost of Magnesium before machining is slightly greater. We have many case histories in our files of actual savings made by changing to Magnesium castings.

During the war, Utica Radiator made elaborate Magnesium castings for the Air Corps. Our laboratories, X ray and heat treating equipment have been certified by the United States Army Air Forces and the controls which were necessary on Magnesium production during the war period are still employed.

Magnesium alloy castings of all sizes from a fraction of an ounce up to six feet in diameter, were produced during the war. Since then, Magnesium castings have been made for a great variety of uses, including aircraft, textile machines, office equipment, scales, wire, fish line winding, baseball masks, polishing and grinding equipment, vacuum cleaners and toys.

If you are having difficulties in getting deliveries of castings of other metals, why not investigate the possibilities of using Magnesium. We will be glad to study your problem — without obligation — and give you an estimate of cost.

Write for complete information to

UTICA RADIATOR CORPORATION
UTICA, N. Y.

MANUFACTURERS OF

MAGNESIUM CASTINGS • ALUMINUM CASTINGS • CAST IRON PRODUCTS

Take one at random*

That's what your assemblers do; and the closer you can come to giving them *uniform* screws the closer they'll come to giving you top production.

Culls and duds will slow down the best assembly line because they annoy and upset the operators.

One *sure* way to improve production is to make sure that the screws you furnish are as near uniform as humanly possible. And since CORBIN Screws are noted for their uniform quality, why not join the thousands of successful manufacturers who stick to CORBIN?

SS-3

*it's a thoroughbred—
it's a CORBIN.

CORBIN SCREW DIVISION
The American Hardware Corporation
NEW BRITAIN • CONNECTICUT
Warehouses:
New Britain • New York • Chicago

CORBIN
REGULAR SLOTTED
Screws

ALUMINUM gets a SMILE that won't come off...

AND HERE'S THE REASON...

Window sashes of satin-finish aluminum...that *stay* bright! Aluminum pots and pans that don't darken! Outdoor furniture in aluminum that's tinted any attractive shade!

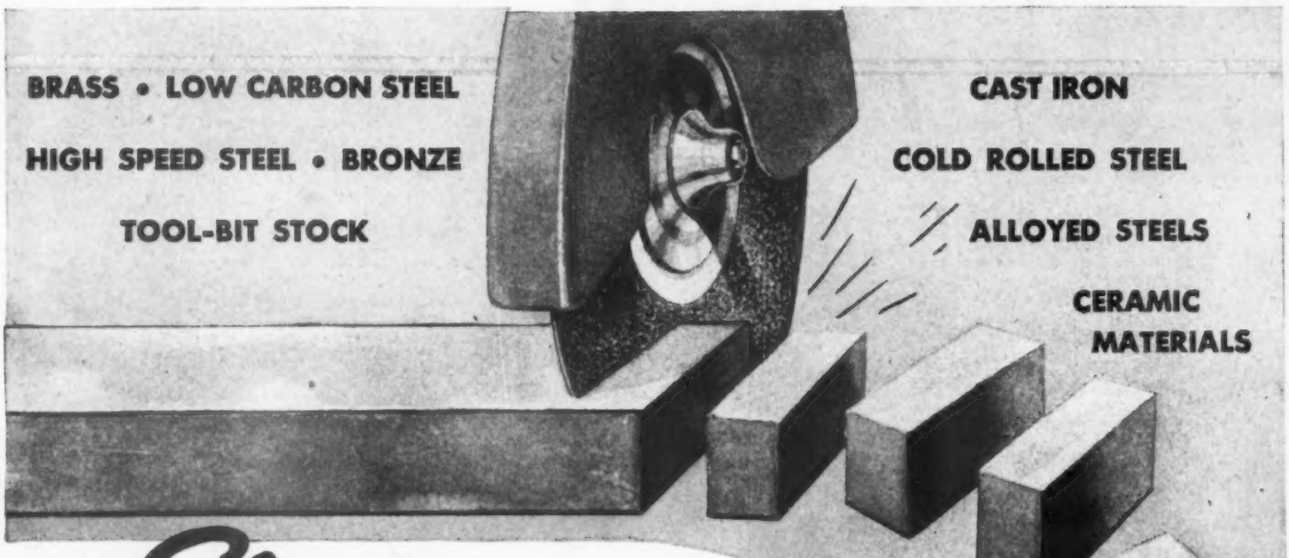
Aluminum owes this new quality of permanent beauty and wear resistance to anodyzing—a process requiring controlled temperatures . . . and refrigeration is usually a *must*.

G-E automatic temperature controls . . . plus the reliability of G-E condensing units . . . will maintain the anodyzing bath within one degree of the ideal temperature. This constant temperature level means better anodyzing . . . greater film efficiency.

Ask your G-E distributor or contractor for more information on industrial refrigeration for anodyzing or other applications. He's listed in the Classified Directory. He'll be glad to help. *General Electric Company, Air Conditioning Department, Section 82912, Bloomfield, New Jersey.*

GENERAL ELECTRIC

Industrial Refrigeration



Electro HIGH SPEED CUT-OFF WHEELS

It does take a bit of believing, no doubt about it, to think that "grinding" wheels can be made to cut with knife-like speed. But, in "Electro" HIGH SPEED CUT-OFF WHEELS, we achieved amazing strength in wafer thinness. We perfected a cutting *edge*. We reduced cutting-off time from minutes to seconds. Tell us that we may and we'll show you *on your jobs*, on anything from tool-bit stock to ceramic materials, how Electro high speed cutting-off surpasses all other methods for speed, precision and safety.

In advance of this demonstration, we invite you to send for our new Grinding Wheel Manual, illustrated in full color and technically informative as to components, structure, selection, and operation. No wonder it is the most talked-of catalog in industry! Write for your copy. We'll send it free and post-paid.

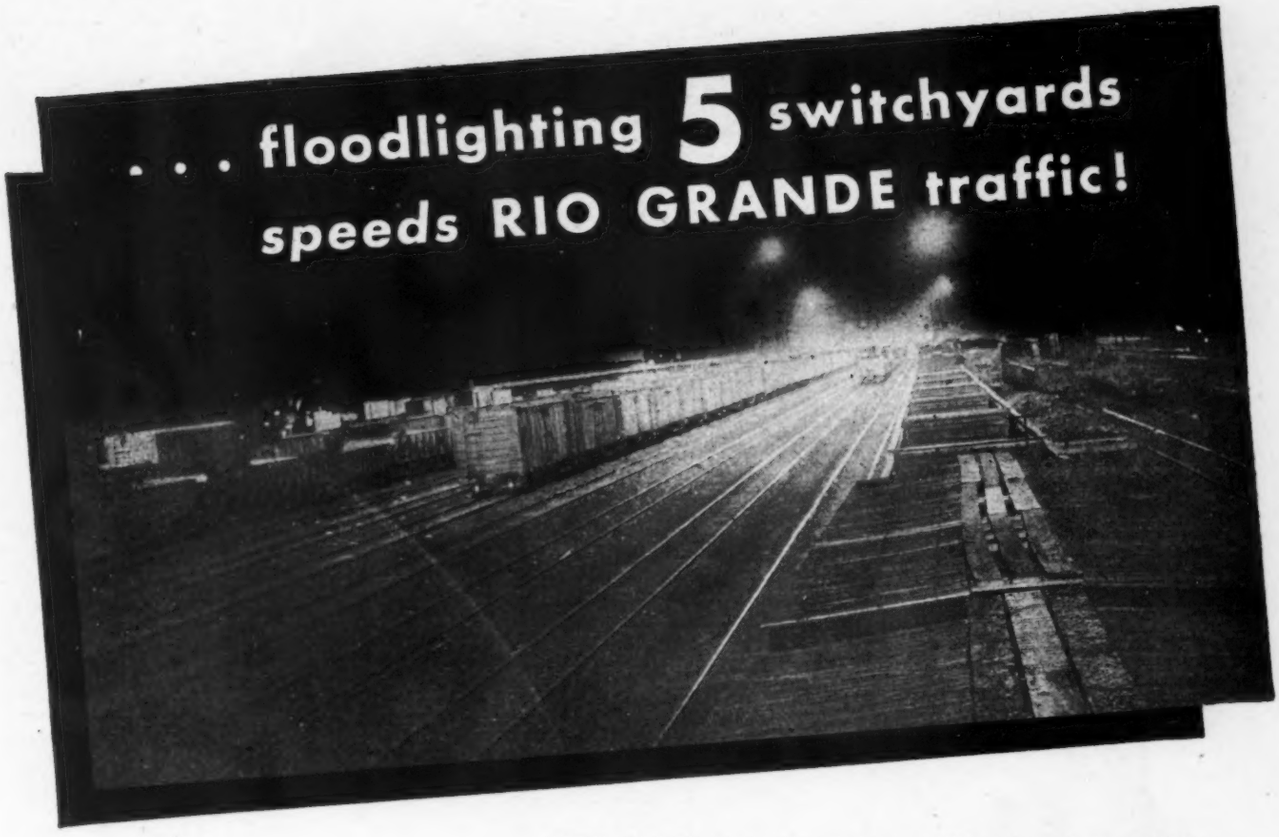
K-328

Electro TRADE MARK SINCE 1919

Electro REFRACTORIES & ALLOYS CORPORATION

MFRS. · REFRACTORIES · CRUCIBLES · STOPPERS · ALLOYS · GRINDING WHEELS

344 DELAWARE AVENUE West Coast Warehouse Los Angeles BUFFALO 2, NEW YORK



• With transformers atop towers . . . Okonite-engineered high voltage power cables rising from underground to supply the electricity . . . 1500-watt floodlights strategically located, the Denver and Rio Grande Western Railroad has turned night into day by recent installations at five of its key switchyards. As a result, its workmen locate cars more easily, read bills on cars, get trains made up faster and on their way sooner. Fewer accidents, less pilfering have resulted. 35 towers are now in use.

and OKONITE-ENGINEERED *cables serve underground and in risers . . .*

In thirty-five of these Rio Grande towers, the electric supply reaches them through 2400-volt or 6600-volt Okonite-engineered cables. The service was unusually demanding calling for cable to be buried in ground at foot of towers, then supported on them in the vertical rise. High voltage is carried right to the tower and stepped down at the tower with transformer. (An underslung transformer platform puts primary and secondary voltages at different levels.)

The 2-conductor cables which were specially assembled for this job were designed with Okoloy-coated conductors, moisture-resistant Okolite insulation, sealed within a jacket of non-flammable Okoprene — assembled and wrapped with a durable finish which included 2 layers of hard-twisted jute. When faced with choosing the correct electrical cable for unusual applications — or for any power, lighting or communication purpose — you can benefit by Okonite's experience-guided recommendations. The Okonite Company, Passaic, N. J.

OKONITE OKONITE SINCE 1878

insulated wires and cables

4092

this spring cost 2¢

—BUT IT COSTS TWENTY BUCKS TO REPLACE IT!

● The failure of one small but important spring in your product can be a costly business. Repairs often run into figures out of all proportion to the actual cost of the spring involved. And the inconvenience and the time lost when the machine is out of service certainly do anything but build good will.

With U·S·S American Music Steel Spring Wire you can eliminate spring failures entirely or reduce them to the absolute minimum. Why? Because this high grade spring wire combines extremely high tensile strength, unusual toughness and all-round soundness which make it unexcelled for small, high quality springs that must deliver exacting service.

U·S·S American Music Wire adds so little to the cost, per spring or even per machine, that it more than pays for itself—in better performance, in trouble-free service for the life of the equipment. Its use is a profitable investment in customer satisfaction.

Remember, there is no finer Music Wire produced *anywhere* than U·S·S American. Leading users and makers of fine, quality springs, have found it not merely equal to the best imported spring wire, but definitely *better*. Best of all, this wire is available NOW—for *immediate delivery* —in any quantity you need.

U·S·S AMERICAN

MUSIC Steel Spring WIRE

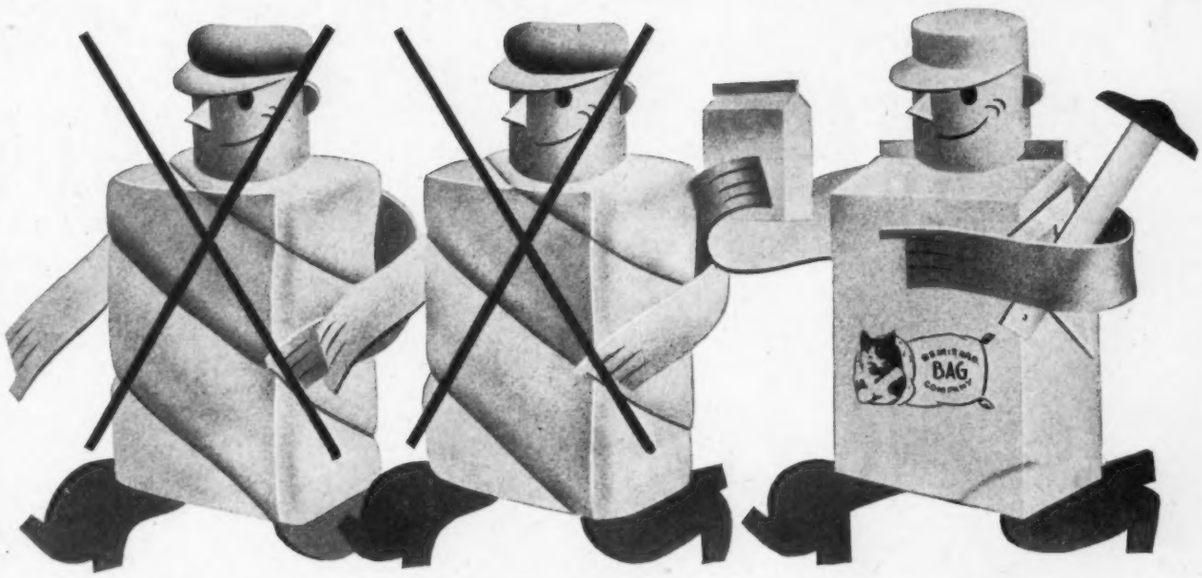
If you make it of WIRE...make it of the BEST!

USS AMERICAN MANUFACTURERS WIRE UNITED STATES STEEL

American Steel & Wire Company
Cleveland · Chicago · New York
Columbia Steel Company
San Francisco
Tennessee Coal, Iron & Railroad Company, Birmingham, *Southern Distributors*
United States Steel Export Company, New York

★ UNITED STATES STEEL ★

Are you using Three men on a wrapping job



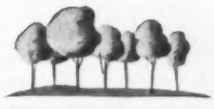
when a special paper bag will do the work of two?

Yes, if you now wrap your product in paper, there is a good possibility that Bemis can develop a bag for your product that will give you savings in time, labor and materials in your packaging department . . . perhaps save the services of two or more men now engaged in wrapping.

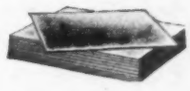
Call Bemis Paper Bag Specialty Division Today

The same Bemis Packaging Specialists whose ingenuity developed bags for the products illustrated, will study your operations upon request. Their recommendations may result in important competitive advantages and savings in packaging costs. Mail coupon for immediate action.

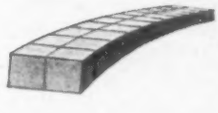
SUCH PRODUCTS AS THESE—NOW WRAPPED IN PAPER —MAY BE PACKED IN BAGS



Trees can now be shipped in special paper bags, instead of being wrapped. Advantages: Faster, easier handling; moisture around roots is retained; longer, safer shipments are possible.



Wallboard—Six sheets, 4' x 12', can be slipped into a special paper bag in one simple operation. Advantages: Savings in labor, time, materials, floor space in your packing departments.



100-Pound Cubes of Firebrick—A special paper bag makes this hard-to-wrap products easier and cheaper to package. Other advantages: Original moisture retained longer; quality and shelf-life prolonged; return of goods minimized.

BEMIS BRO. BAG CO.

PAPER BAG SPECIALTY DIVISION • 1064 S. VANDEVENTER, ST. LOUIS, MO.

COUPON

Gentlemen: Please have a Bemis Packaging Specialist call on me. I'm interested in a special paper bag for_____
(product)

*Name*_____

*Firm Name*_____

*Address*_____

*City*_____ *State*_____

It's the SIDES of a V-Belt That Really Get the WEAR!

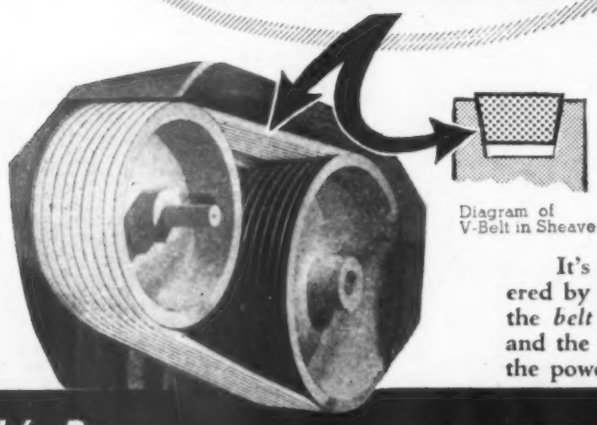


Diagram of V-Belt in Sheave

Look at this diagram of a V-Belt in its sheave. You see at once that the *sides* of the belt do all the gripping on the pulley and get all the wear against the sheave-groove wall.

It's the *sides,* moreover, that pick up all the power delivered by the driver pulley. The sides *transmit* that power to the *belt as a whole.* And then, once more, it's the sides—and the sides *alone*—that grip the driven pulley and *deliver* the power to it.

It's Because the CONCAVE SIDE (A GATES PATENT) Reduces Sidewall Wear That It Is IMPORTANT to You!

The fact that the *side* is the part that does the work and gets the wear explains why you have always noticed that the sidewall of the *ordinary* V-Belt is the part that wears out *first.* Naturally, then, when you lengthen the life of the sidewall you lengthen the life of the belt.

The simple diagrams on the right show exactly why the ordinary, *straight-sided* V-Belt gets excessive wear along the *middle of the sides.* They show also why the Patented Concave Side *greatly reduces* sidewall wear in Gates Vulco Ropes. That is the simple reason why your Gates Vulco Ropes are giving you so much longer service than any straight-sided V-Belts can possibly give.

Longer Sidewall Wear Is MORE IMPORTANT NOW Than ever before!

Now that Gates Specialized Research has resulted in V-Belts having much stronger tension members—tension members of Rayon Cords and Flexible Steel Cables, among others—the sidewall of the belt is often called upon to transmit to the pulley much heavier loads. Naturally, with heavier loading on the sidewall the life-prolonging Concave Side is more important today than ever before!

Straight Sided V-Belt — FIG. 1

How Straight Sided V-Belts Bulges When Bending Around Its Pulley — FIG. 1-A

You can actually feel the bulging of a straight-sided V-Belt by holding the sides between your finger and thumb and then bending the belt. Naturally, this bulging produces excessive wear along the middle of the sidewall as indicated by arrows.

Gates V-Belt with Patented Concave Sidewall — FIG. 2

Showing How Concave Side of Gates V-Belt Straightens to Make Perfect Fit in Sheave Groove When Belt Is Bending Over Pulley — FIG. 2-A

No Bulging against the sides of the sheave groove means that sidewall wear is evenly distributed over the full width of the sidewall—and that means much longer life for the belt!

4612

THE GATES RUBBER COMPANY
Denver, U.S.A.
World's Largest Makers of V-Belts

Gates
REG. U.S. PAT. OFF.
THE MARK OF SPECIALIZED RESEARCH

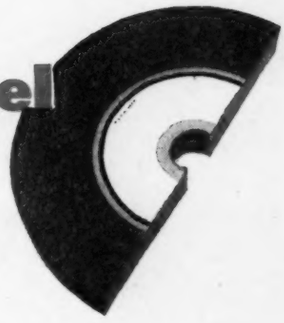
GATES VULCO ROPE DRIVES

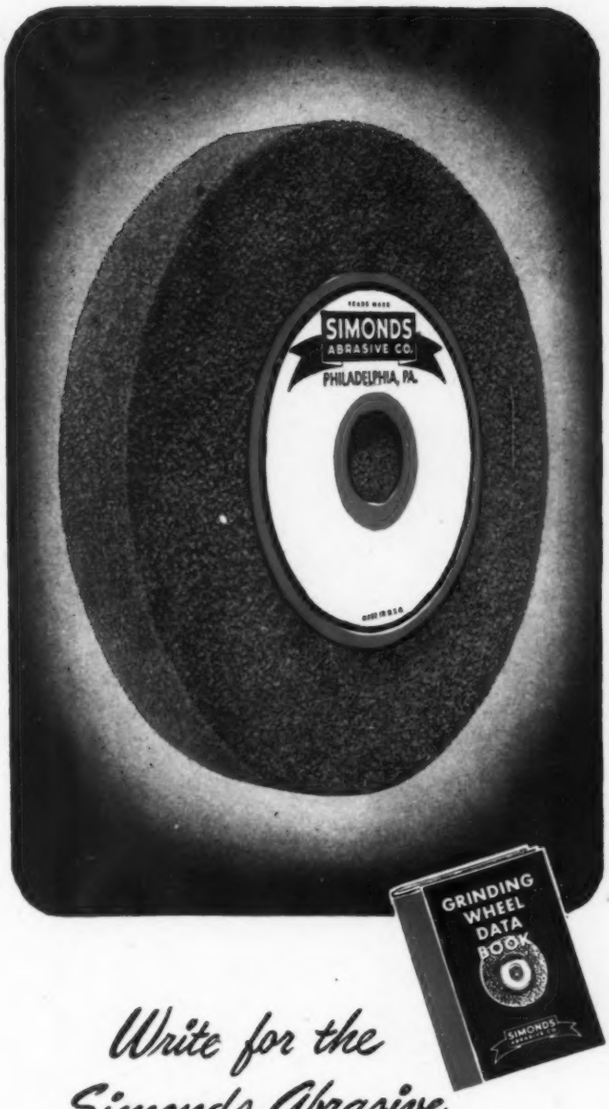
Engineering Offices and Jobber Stocks **IN ALL INDUSTRIAL CENTERS** of the U. S. and 71 Foreign Countries

Rule O' Thumb

may get you

half a wheel





Write for the Simonds Abrasive Data Book

Why wear down and out two or three wheels when one might do the job and do it better? Selecting wheels by guess adds up to too much money for too many wheels; too much cost because of sluggish stock removal, inaccuracies in finishing, and rejected work.

These are facts and are good reasons why there are thousands upon thousands of combinations in grain, size, grade, structure and bond in the complete line of Simonds Abrasive Borolon (aluminum oxide) and Electrolon (silicon carbide) products.

Whether you are working on soft plastics or the hardest metal, with the Simonds Abrasive Data Book you have the means of intelligently selecting the grinding products that will do your jobs better and cheaper.

Borolon and Electrolon Stocks are now restored for prompt supply of your requirements. You will find Simonds Abrasive Distributors ready to help you in your wheel selection and prompt to serve your needs.

SIMONDS ABRASIVE CO.

SIMONDS ABRASIVE CO. *Is a Division of* SIMONDS SAW AND STEEL CO. *Other affiliated companies:* SIMONDS STEEL MILLS SIMONDS CANADA SAW CO. LTD

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INLAND BOXES BUILD GOOD WILL

INSIST ON A "Package by Inland"

INLAND
CONTAINER CORPORATION
Corrugated Fibre Boxes

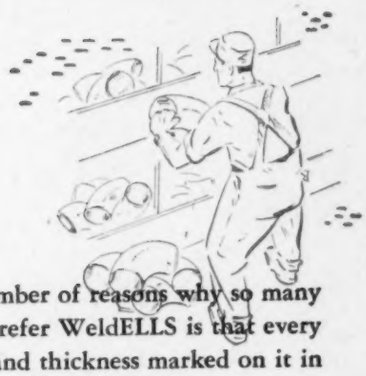
INLAND BOXES

INDIANAPOLIS, INDIANA · EVANSVILLE, INDIANA · MIDDLETOWN, OHIO · CINCINNATI, OHIO
DAYTON, OHIO · CHICAGO, ILLINOIS · MILWAUKEE, WISCONSIN · DETROIT, MICHIGAN

WeldELLS

for example:

Permanent identification markings on every fitting



JUST one of a number of reasons why so many piping people prefer WeldELLS is that every fitting has its size and thickness marked on it in such a way that it will stay there.

The expense we go to in providing legible and permanent marking pays dividends to users in handling and storing WeldELLS in the shop and on the job. It eliminates "wrong size" errors; saves time and trouble.

Yes, it's another example of extra steps we take that mean extra value to you in WeldELLS. Add it to the features listed opposite and you see why WeldELLS *"have everything"* . . . why they give you the means of doing the job as *well* as it can be done, as *fast* as it can be done, and, therefore, as *economically* as it can be done.

WeldELLS alone combine these features:

- **Seamless** — greater strength and uniformity.
- **Tangents**—keep weld away from zone of highest stress —simplify lining up.
- **Precision quarter-marked ends** — simplify layout and help insure accuracy.
- **Selective reinforcement** — provides uniform strength.
- **Permanent and complete identification marking**—saves time and eliminates errors in shop and field.
- **Wall thickness never less than specification minimum**— assures full strength and long life.
- **Machine tool beveled ends**— provides best welding surface and accurate bevel and land.
- **The most complete line of Welding Fittings and Forged Steel Flanges in the World**— insures complete service and undivided responsibility.

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General Offices & Works: P.O. Box 485, Chicago
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have everything

HOW *Flexible* . . .

SHOULD THE RIGHT ADHESIVE BE?

RELY on National . . . with its interest in your individual requirements . . . for an adhesive that will be flexible enough to meet all plant and field variations.

Let's look at some individual requirements. A hard luggage adhesive should be easily handled and versatile. It should adhere vulcanized fiber to plywood . . . 'draw on' leather to wood, fabric, paperboard, etc., . . . bond wood molding inside sample cases . . . laminate multiple plies of veneer before shaping under heat and pressure . . . and offer exceptional resistance to weather and fungus. A soft luggage adhesive should leave bonded leathers and treated fabrics with an outstanding softness and pliability.

An upholstering adhesive should provide adequate tack and speed for hand adhering cloth to cloth, chipboard, wood, wadding, etc. It should be free from residual odor and any tendency to penetrate and stain light fabrics.

A labeling and overcoating adhesive should bond to wood, fiber, painted steel, tin and glass. It should be weather-proof, vermin-proof, age-proof.

It doesn't matter whether your adhesive problem is a run-of-the-mill packaging, converting, assembling job or a brand new postwar problem. National is interested in creating an adhesive formula that will meet your individual requirements . . . provide sufficient flexibility for material and commercial variations . . . withstand all extremes of shipping and consumer uses. Your inquiry is invited — NOW!

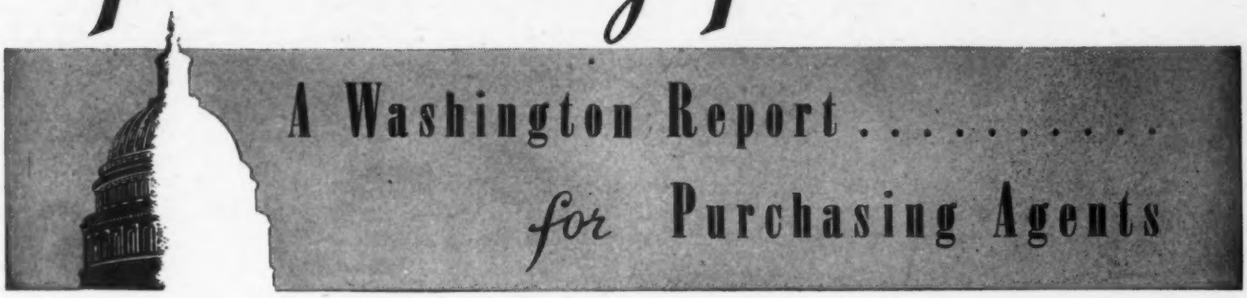
• Offices: 270 Madison Avenue, New York 16; 3641 So. Washtenaw Avenue, Chicago 32; 735 Battery Street, San Francisco 11, and other principal cities. In Canada: Meredith, Simmons & Co., Ltd., Toronto. In England: National Adhesives, Ltd., Slough.

National ADHESIVES

Dunellen Plant

EVERY TYPE OF ADHESIVE FOR EVERY INDUSTRIAL USE

Purchasing Previews



December 2, 1946

PRODUCTIVITY INCREASE WILL SCALE DOWN PRICES . . . .

Break in the unrestricted buying wave that has sustained a sellers' market since V-J Day is responsible for the rash of predictions that a recession is imminent.

Facts are that no large scale deflation of values is anticipated. Costs of production--largest of which is the cost of labor--will remain high, and it is only through an increase in productivity that the costs of unit production will come down.

Lower prices demanded by purchasers will tend to bring down the speculative prices established by sellers on the basis of a flush market. The high prices served to finance expansion and modernization of production equipment, and will make possible a substantial increase in productivity.

Improvement in productivity will not come overnight. It will be a gradual process, but definitely measurable. Outside of taking the speculative water out of inventory replacement prices, no sharp deflation of prices is looked for.

Buyer resistance will largely serve to reestablish normal marketing practices, rather than signal a widespread recession.

The economic observers who give the economy six months--eight months, a year, or eighteen months--to crack, base their observations on the simple premise that prosperity cannot last. Having accepted this as fact, it merely becomes a question in their minds as to how long the patient can live.

A similar wave of pessimism followed V-E Day, with the cutbacks of war production that followed. After V-J Day, it was forecast that unemployment would reach what was considered then as a conservative figure of eight million --with some highly touted observers even speculating that unemployment would reach 12 million in the spring of 1946. This pessimism was dispelled when employment reached its greatest peacetime level during the spring, summer and fall.

GOVERNMENT CONTROLS IN FINAL LIQUIDATION STAGE . . . .

Remaining Government controls which have hung over from the war period will be washed out quickly after the first of the year.

Effort will be made to retain a Government program in the field of housing for veterans, but it is generally speculated that price levels will exceed veterans' ability to pay, and larger emphasis will be placed on rental housing. There is strong support for a moderate Government housing program in the very low-cost field, with a complete return of the building industry to an uncontrolled basis.

The Government agencies have been operating largely by remote contact with industry for some time. When the

basic material controls were dropped, and consumers were no longer required to state their raw material needs and their monthly production, precise information ceased to be available to Government. This condition in part explains why the timing on Government actions during recent months has been so poor. The actions were taken as a result of pressure, rather than close contact with the trade.

SURPLUS SALES TO BE ON A BID BASIS . . . .

War Assets Administration is de-emphasizing site sales and is planning to get back strongly into liquidation selling, with the idea that only through moving surpluses on a liquidation basis can the bulk of the goods be moved before they become a drug on the market.

The site sale program was largely designed to give buyers in the areas where surpluses are located the opportunity to buy. The site sale also afforded veterans a better chance to exercise their priorities.

This was all well and good, except as it actually reduced the volume of sales. By emphasizing a direct to the consumer sales approach, the WAA stilled some of the public clamor to get a chance to buy from the Government, but the policy overlooked the realities of mass marketing, requiring use of the established trade channels.

The current program is aimed at liquidating 75% of the inventory of surplus consumer and capital goods by January 31.

Crux of the new program will be to cut down the time which holders of priorities may take to exercise them. Also the general practice will be to reduce the period during which the average buyer can come in and buy at fixed prices.

After the property is fully offered to priority and non-priority buyers, any residue may be sold at competitive bids.

Result will be to empty out the warehouses and to get usable surpluses to the market quickly. Standard merchandise will be picked up by conventional merchandisers and sold at or near the going market price of competitive goods.

The remainder, sold on a bid basis, will tend to be non-competitive merchandise and will move at liquidation prices.

CONSUMER BUYING PATTERN TO CHANGE . . . .

Change in the buying pattern of consumers appears imminent to Department of Commerce observers. During and immediately following the war, there was heavy buying of non-durable goods. This was traceable, in part, to the immediate need for civilian clothes and textiles by men and women discharged from the services, and to the fact that there were practically no durable goods available for consumer purchase.

Now the pattern of supply has changed, in that durable goods of a standard quality have become available in increasing quantity. Department of Commerce observers see the possibility that sales of non-durables will tend to drop off, and that merchandisers in this field will lose ground to sellers of automobiles, furniture, household appliances, etc.

INVENTORY TRENDS UNDER STUDY . . . .

Analysts seeking to develop an index of economic trends are hampered by the fact that much of prewar activity was measured in terms of dollar volume, and it is difficult to compare current dollar values with those of before the war.

Obviously, the buyer has to estimate need in terms of numbers of units, rather than dollar value. At the same time, the inventory has to be paid for in dollars.

Only general observation that can be made is that on a high price market, buyers must hinge their inventory policy closely with the volume of sales.

TOY MANUFACTURER ELIMINATES OVERTIME

"During rush seasons, we used three men gluing shipping cartons. They worked almost every night making the next day's supply. Now, with Acme Silverstitchers, one man does the job without overtime, and still keeps well ahead of production."

USE THE CLOSURE COMBINATION THAT

SAVES LABOR OF TWO PERSONS

SilverStitch REG. U.S. PAT. OFF. — **SilverStitchers** REG. U.S. PAT. OFF.

BOX STITCHING WIRE

- One-piece, continuous length, 5 and 10 pound coils . . . cuts threading time
- Galvanized to resist rust, corrosion
- Always uniform in width and gauge
- Makes stronger, surer closures than other methods . . . unaffected by weather

BOX STITCHING MACHINES

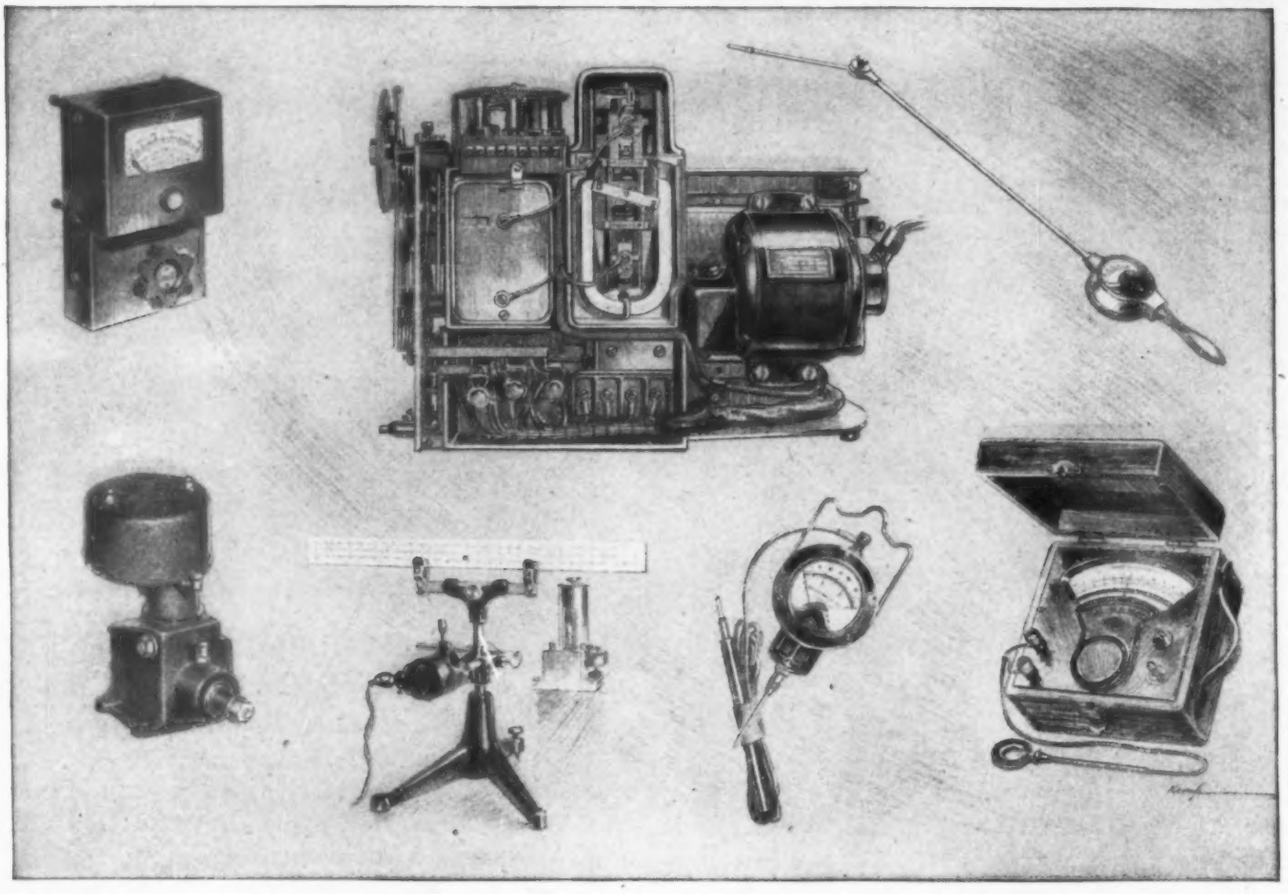
- Few moving parts . . . vital ones reversible . . . for lower maintenance costs
- Adjustable, single pedal control
- Operate easily, smoothly, quietly
- Heavy duty construction . . . low power consumption . . . for long thrifty service

Sealing Shipping Containers by Stitching is Faster, Stronger and More Economical

ACME STEEL COMPANY

NEW YORK 7 ATLANTA CHICAGO 8 LOS ANGELES 11

PERMANENT MAGNETS MAY DO IT BETTER



Permanent Magnets Help Guide Science and Industry

Permanent magnets play a vital role in modern manufacturing methods, scientific research, testing and measurements, industrial and domestic controls, signals and alarms.

Ammeters, Wattmeters, Voltmeters, Magnetic Gauges, Thermostats, Pressure Controls, Polarized Relays and Fluxmeters—these are but a few of the many—all of which rely upon the "Packaged Energy" of the magnet in their function.

Permanent Magnets aid physicists, chemists and engineers in the laboratory, plant and field. They aid the *Pyrometer* in measuring extreme temperatures of molten metal; in recording the intense heat in ovens, linotypes, die castings; and in the exacting heat controls in electrical, rubber, paper and plastic manufacturing. The *Galvanometer* using permanent magnets is a basic tool in the measurement of electricity. It is used in connection with other devices such as the *Potentiometer.*

Permanent Magnets also serve in measuring mechanical conditions such as the measurement of speed in *Tachometers* and *Speedometers,* and to indicate relative positions, as in *Gauges.*

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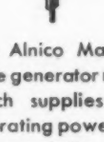

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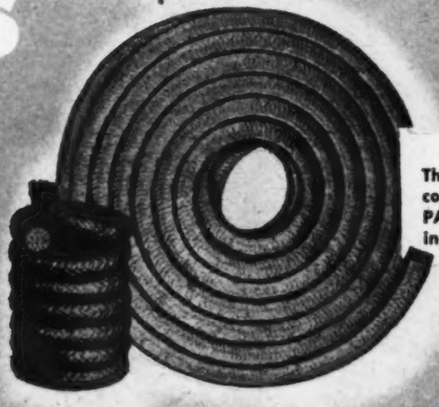

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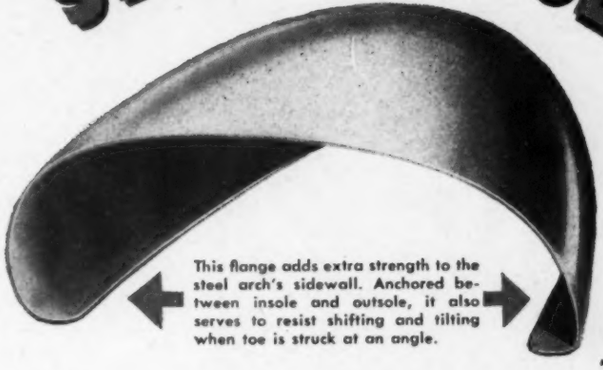

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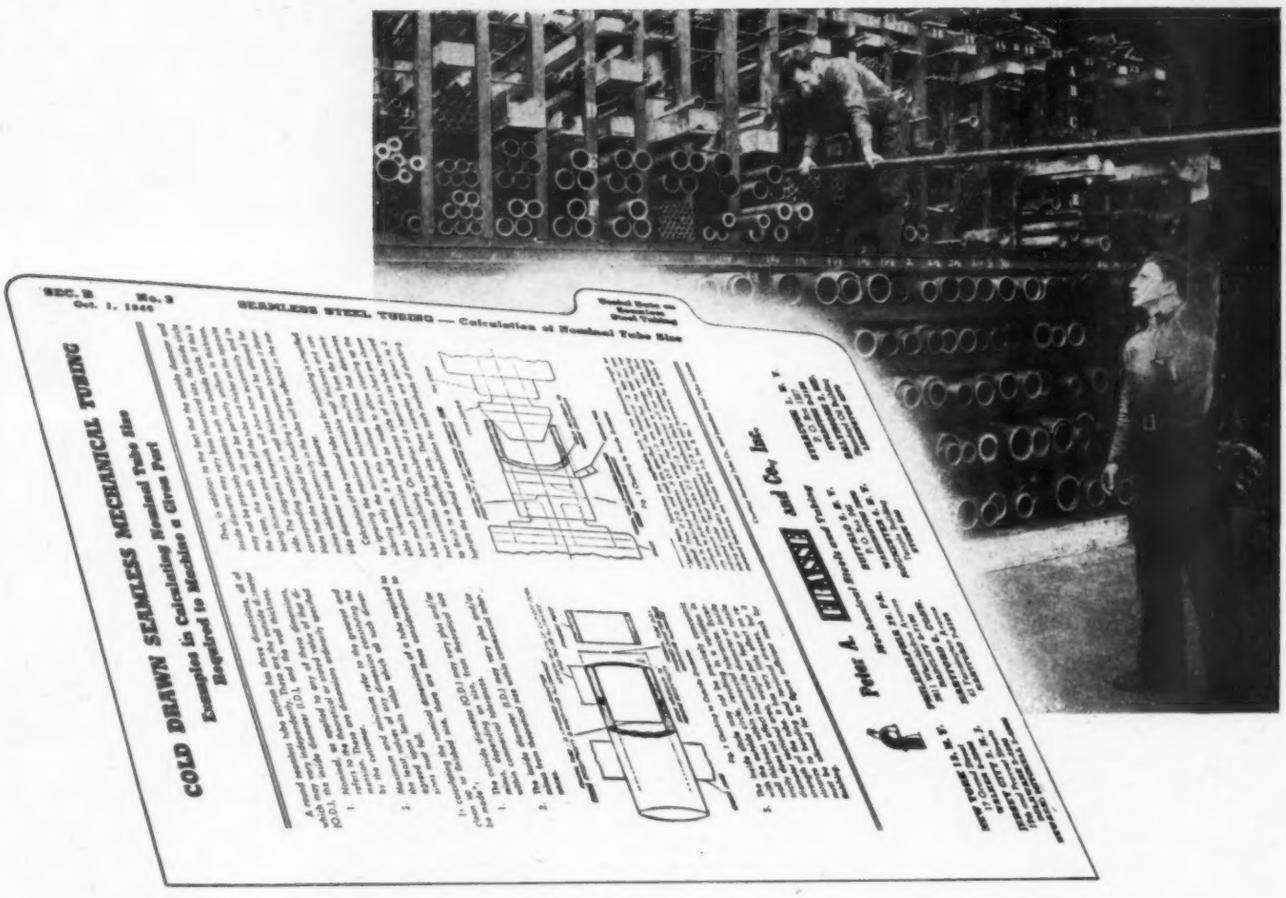
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No. 9
SEAMLESS STEEL TUBING — Calculation of Nominal Tube Size
COLD DRAWN SEAMLESS MECHANICAL TUBING
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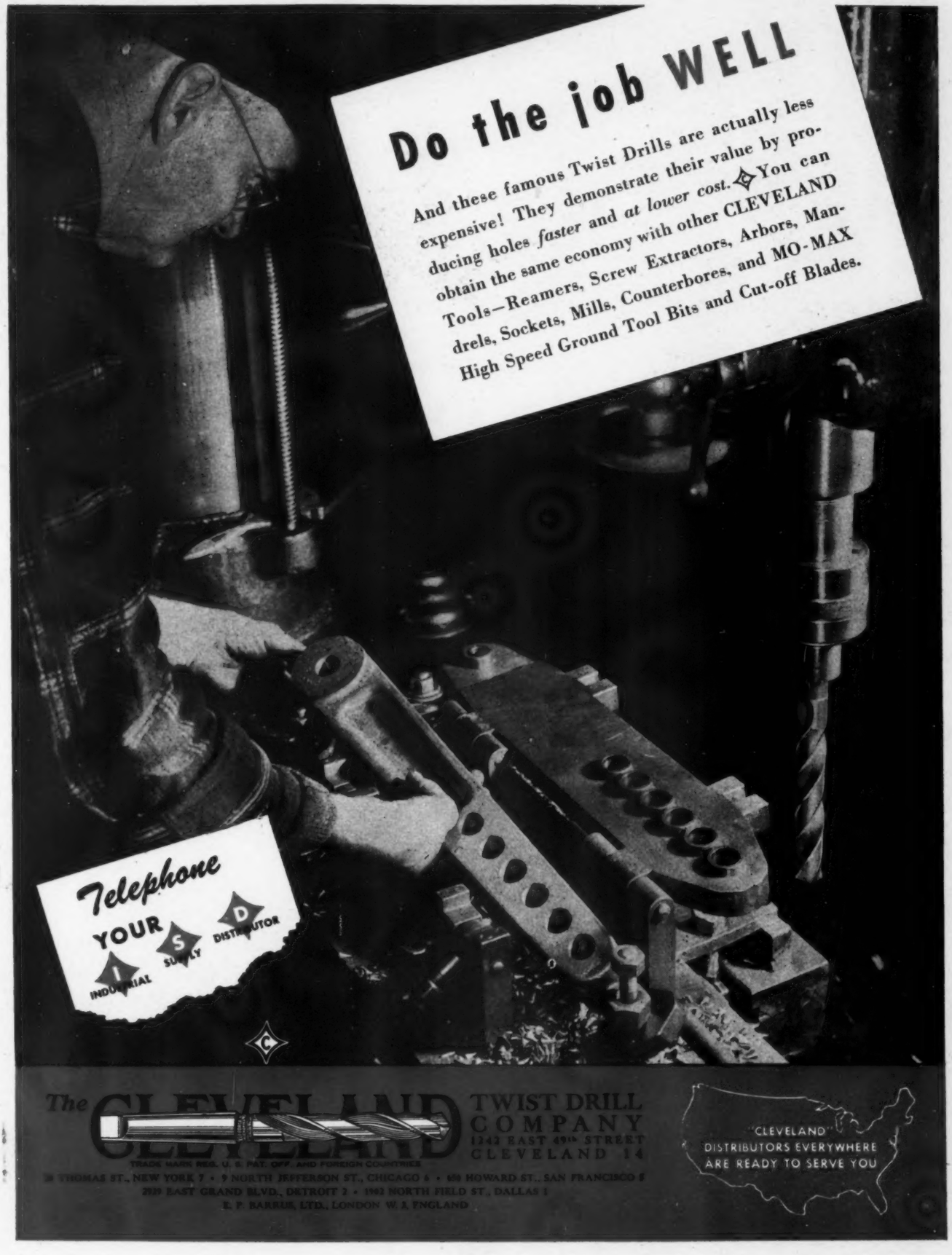
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The National Magazine of Industrial Procurement

DECEMBER, 1946

Published monthly by

CONOVER-MAST MAGAZINES, INC.

Printed at: Orange, Conn.

Editorial and Executive Offices:
205 East 42nd Street, New York 17, N. Y.

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PURCHASING is an independent journal not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government. Established 1915 as "The Purchasing Agent." Consolidated with "The Executive Purchaser."

VOLUME XXI. NUMBER 6, 35c per copy. $3.00 per year, $5.00 for 2 years. Extra postage for Canadian and foreign subscriptions $1.00 a year. Contents are indexed weekly and annually by the Engineering Index Service.

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MARKETS ARE MEETING RESISTANCE

WHILE shortages of basic materials still characterize many of the markets in which purchasing agents buy, and deliveries are still extended, the dominant note in today's buying is one of caution and conservatism. This directly reflects a similar development in consumer buying, which industry serves.

Business statistics show that finished goods inventories are mounting to new high levels from month to month. The supply lines are not only full, but are getting sticky. A business commentator remarks that "The bloom is off the boom." A manufacturer asks, "Are we producing for surplus?" A high powered executive declaims, "Selling must now catch up with production."

The reason is partly psychological. When goods were under the counter, the eager customers formed into a long and hopeful waiting line. When the goods are in the windows and showcases, the customers decide that they can buy just as well tomorrow, and take a more objective look at their own desires.

In that process, the more fundamental reasons are revealed. The customers are seeking better value, and are tired of shoddy quality and substitutions. Ultimate consumer and industrial buyer have these aims in common. A proposed resolution at the Southeastern Buyers' Conference at Birmingham called for a return of higher quality standards; it failed of passage chiefly because there is no specific body to whom such a request could be addressed. It is a malady affecting our whole national economic system, which has failed to evaluate properly the public sentiment in respect to quality and price.

Advocates of economic controls have had some success in controlling supply and price, at least for a time, but they have never controlled the intangible factor of demand. With controls on the way out, it becomes increasingly evident that demand is the controlling factor. The customer will be served. That's a sure sign that a buyers' market is on the way. The wise buyer will not be caught with large stocks or commitments for overpriced and substandard materials when that day arrives.

Stuart F. Heinritz

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HIGHLIGHTS

A brief summary of outstanding features of timely interest and importance in this issue, to conserve the time of busy readers

Watch Your Inventories! is sound advice in these days of transition, when the uncertainties of demand and price make the stockroom one of the major hazards of all business—a factor that may hold the key to profits or losses, and a direct responsibility of purchasing policies. In a timely article on page 89, D. Stevens Wilson analyzes the situation from an objective scientific viewpoint, with evidence of current trends that affect the pattern of procurement and values for the days ahead.

Closely allied to this problem, and offering a practical method of keeping stocks in balance with requirements, is Weldon B. Gibson's description of **Stock Control for Procurement,** as developed by the Army Air Forces to handle a purchasing program that is a major operation even on the peacetime schedule. This system incorporates the most effective policies and methods used in industrial buying. The story is complete with charts and forms. Turn to page 93.

This month's **Guest Editorial** (page 87) is by Robert G. Matley of Detroit, N.A.P.A. Vice President for District No. 4. As President of the Detroit Association a few years ago, Mr. Matley wrote a series of articles that were widely acclaimed as a practical guide to the principles of buying. The basic features of his policy are distilled into a sound and valuable discussion of the topic, "Purchasing as a Science".

Setting a pattern for constructive group effort directed to the particular problems of a **Regional Economy,** the purchasing agents of the Southeast, District No. 7, met in conference at Birmingham in October. A top ranking program, with authoritative speakers and unusually active audience participation, provided timely information and stimulating comment of interest to purchasing men in every section of the country. A comprehensive report of the conference appears on page 116, and the major papers are presented on the following pages.

The purchasing agent has a three-fold opportunity for serving his company, his community, and his profession in the field of **Public Relations.** Lewis M. Smith outlines this program on page 122, based on the successful public relations program of a progressive utility company in the fast growing industrial South.

Relationship with Vendors is the heart of every purchasing program, and the buyer's daily problem as he seeks to establish and maintain satisfactory sources of supply. Tom Jolly, Past President of N.A.P.A. and chairman of the national committee dealing with this topic proposes a basic agreement with vendors in his article on page 130, that would go far toward eliminating contract complications. And on page 113, Art Pearson discusses the problem on the level of individual sales contacts.

Other significant articles emanating from the conference at Birmingham include George Renard's keen appraisal of the business scene in **"From One P.A. to Another"** (page 133), and Howard Lewis' analysis of **"The Economics of Purchasing"** (page 125).

The Container Situation is discussed in a four-way forum by qualified experts in the diverse fields of steel and fibre drums, burlap bags and the relatively new process of heat-seal closures, in a timely report appearing on page 108. The report covers new developments and physical characteristics of these varied packaging methods, as well as problems of availability and supply that are important to the buyer. Here is authoritative source information on the current situation and outlook for these products.

On the broader economic front, you'll find food for thought in **Grey Leslie's** review and commentary on page 111, that puts much needed emphasis on the first principles of economic science that have been too often overlooked in the recent era of experimentation.

Technical and market information on the materials you buy is contained in Ned Cady's story on **Buying Coated Fabrics** (page 102) and R. M. Nelson's analysis of the outlook for more adequate supplies and wider industrial applications for **Flat Rolled Steels** (page 138). Here are two articles you will not want to miss.

Don't overlook these monthly departmental features compiled especially for purchasing men—Leo Parker's review of **Business Law** decisions on page 144, **Washington Letter** on page 67, the listing of **New Trade Literature** that is yours for the asking on page 14, and the illustrated summary of **New Products and Ideas** that are now available for the industrial buyer, on page 148.

Meeting Steel Requirements the Hard Way—

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There are many requirements that we cannot handle today, but it is often surprising what can be done with the close cooperation of your nearby Ryerson plant. If needed steel is out of stock the Ryerson salesman will sometimes be able to suggest a practical alternate steel, or he may know a way in which flame cutting, forming or welding can serve to provide a workable substitute.

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PURCHASING as a SCIENCE

By R. G. Matley

SCIENTIFIC purchasing requires an understanding of economic principles, for the world in which the Purchasing Agent deals is "one in which costs, prices, credits, contractual relations, etc.," are the dominating conditions rather than the technical processes of production.

No one would consider hiring a factory superintendent who knew nothing about mechanical principles, production processes, etc., because he must utilize this knowledge to turn out the required volume at a price. While the Purchasing Agent cannot harness economic forces as the factory superintendent harnesses mechanical forces, he can utilize his economic knowledge like the mariner utilizes his knowledge of navigation, to keep his business ship trimmed to suit the prevailing business winds and to navigate his course on the economic seas. In fact, he sails a sea of economic forces. He may recognize this, and learn economic navigation. Or he can disregard the fact, but thereby he does not avoid contact with the currents and the storms.

In this discussion we shall confine ourselves, as far as possible, to

R. G. ("Bob") Matley is Purchasing Agent for Whitman & Barnes, Division of United Drill and Tool Corporation, Detroit. An active member and past president of the Detroit Purchasing Agents Association, his exceptional qualities of competence and leadership have been drafted for broader service in his chosen field. He is currently a member of the National Executive Committee as Vice President of the National Association of Purchasing Agents for District No. 4, representing the Central Michigan, Detroit, Fort Wayne, Grand Rapids, Indianapolis, Kalamazoo, Muskegon, Saginaw Valley, and South Bend Associations. He is a keen student of purchasing science. His series of editorials which appeared as the "President's Page" of the Detroit Association publication during his term of office as head of that organization, covering the fundamental responsibilities and activities of the purchasing department, was reprinted by popular demand and is recognized as a practical and authoritative summary of this important topic.

the economic applications that affect the Purchasing Agent.

Price is the consideration, expressed in terms of money, given for any commodity.

Price is just about the main-shaft in our economic machine, for through the medium of prices each of us—whether buying as consumers or as Purchasing Agents—decides for what articles to spend our available money. It determines the direction of our purchasing. Then these prices register the state of the market for the producer, and he, accordingly, increases production, decides to store his supply, reship it to another market, etc. Prices thus determine the action of producers as weather conditions influence the aviator. Prices determine the direction of investment and thus determine the expansion of industry. Capital flows where it can expect earnings. As prices indicate or promise good or bad trade conditions, capital flows into or out of an industry.

Establishing Prices

Prices are the resultants of many complex forces that chance to be operating at any one time. Furthermore, they are ever in movement, particularly raw material prices, which signifies that the forces acting upon them are in constant motion, as are the wind currents which produce the weather. They are scale readings in dollars and cents, which measure the economic conditions of any commodity. But they do not measure the pressure of the many forces that are acting or may act upon the commodity and its market. These are ever changing. To understand price and its movement we must go behind the registered readings.

The accepted analysis of price is evident. "Supply and demand" determine price. Price is determined by the interactions or the interplay of supply and demand, but it is necessary to examine the "weight, speed, training, morale" and many other things that will influence the behavior and effect of either supply or demand before we can know much about them.

The whole business process, and particularly the activity of the Purchasing Agent, is but a part of the whole process of adjusting supply to demand. This comes about through competitive bidding. On some days the market may be sluggish—goods are offered for sale but buyers are few or do not bid briskly. As a result, the market goes lower and lower. Or the opposite may be true. This bidding and counterbidding (competition) are the plays and counterplays seen on the playing field. Supply and demand are working out an adjustment by means of competition. The adjustment is registered during the course of the play on the scoreboard as the price.

Demand

Demand is defined as the want or desire for a particular article coupled with the ability to pay for it. Demand arises with individuals and is manifested or registered in retail prices. Because there is a demand for goods, the manufacturer decides to produce these goods. But the whole structure rests on individual demand, which is changeable as to style, color, quality, prices, and the amount desired.

Supply

The products of mine, farm, forest and factory flow to market at the cost of effort and money. Consequently they flow into the market only when the producer expects to realize a gain from their sale. It is expected or anticipated profits that induce production and the sale.

Articles or goods are supplied then because the producer looks forward to making a profit from their sale. The task of the purchaser is to forecast this supply. If he can estimate the time and amounts of its arrival on the market, he has taken an important step toward determining what its effect upon prices will be. The problem then becomes: How can we predict the supply that will be available for market, and when and in what quantities will it flow upon the market? To determine this we will have to consider all of the material and psychological factors that will induce producers to produce the commodity we are interested in.

Bearing in mind what lies behind supply and demand, we must now see how they will adjust to each other in the market.

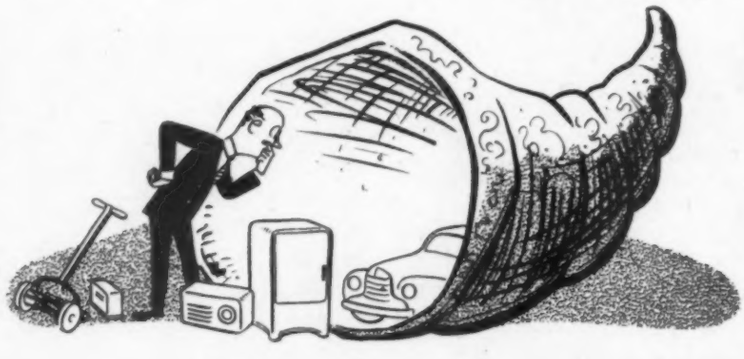
Sellers want to sell at the highest possible price and buyers wish to satisfy their wants at the lowest possible price. They will then bargain until they find a price at which the greatest volume of exchange will take place. The buyer and the seller should estimate all the factors entering into demand and supply. These estimates of demand and supply are composites of:

1. Estimates of present demand and supply.
2. Estimates of the potential demand and supply.
3. Estimates as to when this potential demand and supply will actually appear in the market.

The more nearly the estimates are in keeping with the facts, the more nearly will the price paid or accepted prove to be correct and the less will the market get "out of line".

Prices, then, are exchange points at which the most transactions will occur, worked out through bids and offers. The more facts available regarding the factors of demand and supply, the more competitive the market will be, and the price arrived at is more apt to be the one most representative of all conditions. One price is apt to prevail, and at any point the price will differ from the market price only by the cost of transportation between the two points.

Where the facts are not all known, or where the market is not competitive, buyers and sellers make more haphazard bids and offers. The market is less stable, and less price uniformity prevails. It is a maxim among Purchasing Agents that "Prices must cover the cost of production." What is the assumption behind this statement? We have in mind the bedrock or lower level of prices. Low level prices would stimulate demand; just so, they must have their blighting or deadening effect upon supply. Producers must make profits in order to continue to operate, or they will cease to be sources of supply.



WATCH YOUR INVENTORIES!

The purchasing agent has an opportunity of tempering economic reactions through buying policies closely geared to sales and demand, or he may become the "goat" in the event of heavy inventory losses

Both physical volume and dollar values are vital in achieving a sound balance

By D. Stevens Wilson

Head of the Industry Survey Unit
Business Structure Division
Office of Business Economics
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Washington

A FRESH challenge is being made to the purchasing agent. For the past six years the job of purchasing has been most harrassing. Providing for production during the war period required great ingenuity. Unfamiliar materials and processes, strange specifications, and new end products complicated a job already made difficult by allocation orders, priorities and scarcities.

The end of the war brought other problems. Plants had to be cleared of "war" goods and pipelines filled for the production of civilian goods. In many cases this involved searching out new sources of supply, often in competition with other manufacturers with like demands. It required, also, a meshing of the deliveries of various materials and supplies to permit smooth production flow.

Now, something has to be added. There is increasing evidence that within the not too distant future there will be a shift from a sellers' to a buyers' market — that many goods which are now in short supply may become readily available at competitive prices. For the purchasing agent striving frantically to keep working stocks one or two weeks ahead of production this strikes a different note. Yet the signs are there. In the language of the day, "let's look at the record."

Current Inventory Situation

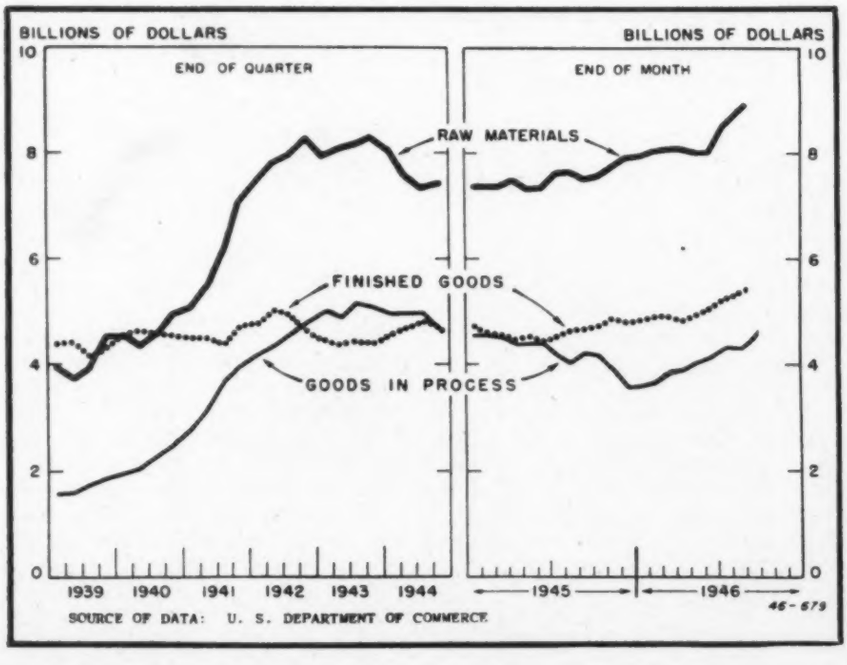
At the end of September the dollar value of inventories held by manufacturers was nearly $18.9 billion. This exceeded by almost a billion the previous record of late 1943, when war production accounted for a large share of the total output. Stocks held by wholesale and retail distributors are also approaching the values reached early in the war period when all manner of goods were being purchased as civilian production was being curtailed.

In acquiring this record amount, accumulations have been at an unprecedentedly rapid rate since V-E day. The full extent of the purchases is not shown by the book figures; it is masked by the liquidations of war goods transferred from business inventories in the process of contract termination. Business firms not only replaced the total amount of "war" goods liquidated but also acquired additional amounts so that a net increase actually took place over the liquidation period.

The great bulk of the liquidation of war inventories in business hands took place in the period from July 1945 through June 1946, when the liquidation amounted to $4.5 billion. Coupled with the net increase shown by the dollar figures, a gross rise of all business inventories of goods in all stages of fabrication for use in the civilian market of about $7 billion is indicated. This is the largest accumulation on record for any 12-month period. Within the manufacturing field alone, the gross increase amounted to $5 billion.

Since June there has been a marked acceleration of the rising trend, even discounting the effects

Chart 1. Manufacturers' inventories, by stages of fabrication



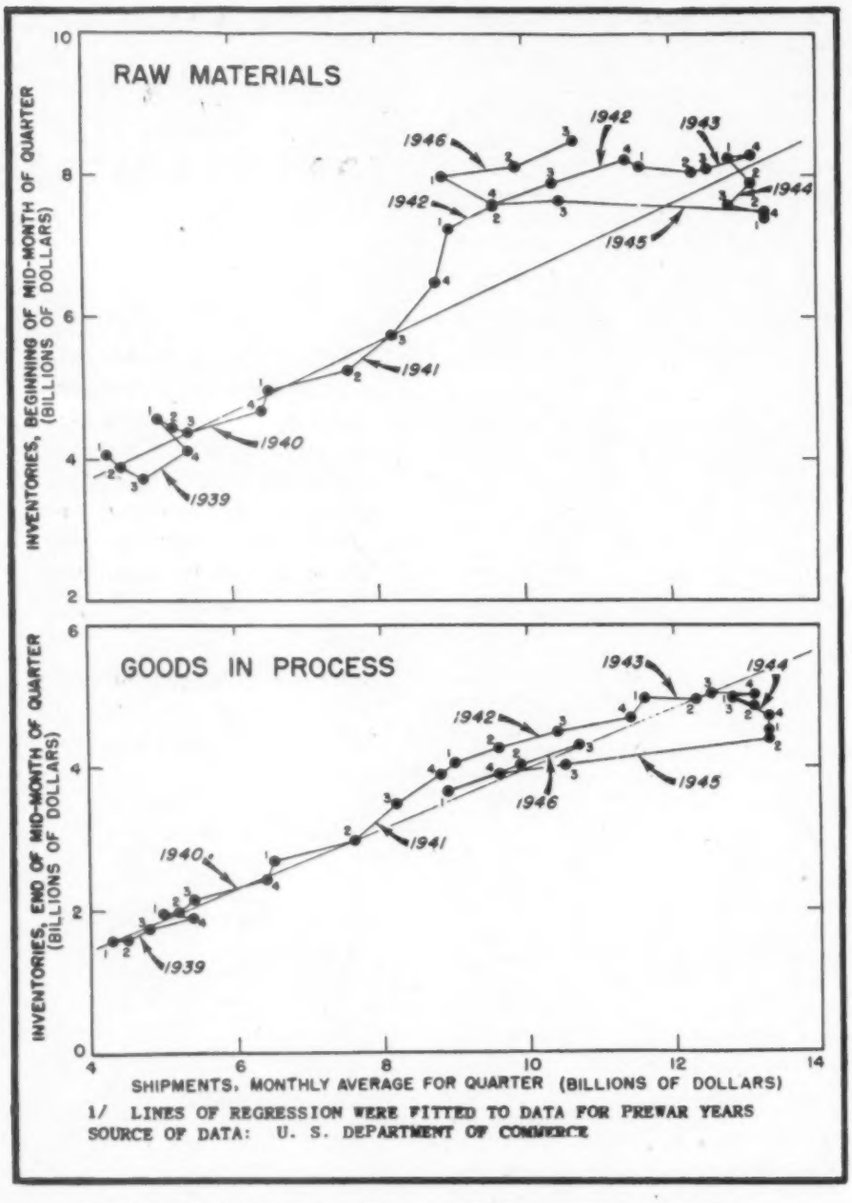


Chart 2. Relationship between manufacturers' inventories by selected stages of fabrication, and shipments

of the price rise of the summer months and the resulting irregularity of the movement of some goods through distributive channels. During the third quarter, manufacturers' inventories increased $1.7 billion — which, on an annual basis would result in a rise of over $6.5 billion.

Composition of Inventories

While the aggregate value of manufacturers' inventories is high, shortages still exist in many parts and components; there is considerable lack of balance. Most of this is obscured in the financial figures; some over-all notions are revealed by the breakdown of stocks by degree of fabrication. (See Chart 1).

The classification in the chart is not precise as an absolute measure of degree of fabrication. Rather, it represents an aggregation of individual company designations. Many companies consider any purchased supplies as raw materials irrespective of the amount of processing which may have been done—the finished goods of one company are often the raw material of another. There is more uniformity within the goods-in-process category, but no way of determining how closely they approach the finished stage or whether the ultimate market is the consumer or another manufacturer.

The value of raw purchased materials held by manufacturers began to increase in mid-1940 with the initiation of the defense program, and reached a peak at the end of 1942. After a period of relative stability, they declined until June 1945, from which point they have again risen quite steadily. The sharp increase of the past three months carried the value to a point well above the war peak.

Inventories of goods-in-process also increased sharply during the war. The high point for the rise, however, was not reached until late in 1943, some time after the peak in purchased materials. The drop which characterized the end of the war production period began in late 1944 and continued until the end of 1945, reflecting the liquidation of war inventories. The value of work-in-process has risen steadily throughout 1946 as civilian output has expanded, but the total is still considerably short of the earlier levels.

There has been some feeling that the recent inventory accumulations are somewhat involuntary, representing goods-in-process which manufacturers were unable to complete as shipping stocks because a part was missing. This reasoning continues with the thought that when supply difficulties are adjusted, output and shipment of finished goods would increase sharply, and while this may bring a temporary rush of goods to market, it would also cut down stocks. To some extent this is true, but only to a limited degree. The rise in work-in-process since the year-end low has been under a billion dollars, or about a third of the rise in total inventories, and has not been more than could be expected in face of the $2 billion increase in shipments. The rise, furthermore, is less than 10% of the current rate of monthly shipments.

The value of finished goods stocks, in marked contrast to the movement of other types of inventories, has remained quite constant throughout the entire 1939-1946 period. There was a slight increase in 1942 reflecting the finishing off of the civilian goods before production was prohibited or curtailed, and a rising tendency has been evident since June 1945. However, the aggregate is now less than 20% higher than the dollar value in 1939, or less than the average price rise over this period.

In substance this means that any significant excess of inventories is not likely to have occurred in finished goods. Manufacturers appear to be handling a dollar volume of shipments 130% above 1939 with shipping stocks which undoubtedly

represent a lower physical quantity of finished goods. Nor is much weakness likely to develop in the work-in-process. This has been geared closely to output and shipments. Thus, the major area of mal-distribution of inventories lies in purchased materials.

This situation may not hold true for some companies, but the aggregate figures suggest that it is the more typical condition. The purchasing agent who wants to compare his experience with that of the group can make some simple tests. What is the total value of purchases made since June 30, 1945, and in the last three months? How do these amounts compare with periods of heavy purchasing in the past? In terms of significant categories of inventories, how do present holdings compare with earlier totals?

Are Inventories Too High?

The record value of inventory holdings by manufacturers and the recent very rapid rate of accumulation have become the subject of conjecture and concern, and in some instances disagreement, as to the present significance.

At the outset, it must be realized that a rise in inventories after the war was inevitable; it was prompted by compulsion for speedy reconversion. In order to achieve an approximate balance between stocks of civilian-type goods and output, it was necessary to replace the liquidated war inventories as fast as possible and then to augment them to support the higher potential civilian production. That the output of goods for civilian use is the largest in history, and that inventories have been built up to the point of near balance, is a tribute to the purchasing man.

The natural reaction at this time, however, in view of the present inventory situation, is to question the level. Are inventories too high, or has the postwar accumulation merely succeeded in filling pipelines necessary to high level peacetime business?

Large inventories are made necessary by high rate of sales, since inventories are only high or low in relation to sales and sales anticipations. Currently, stocks are large, but production and shipments are also high. Obviously, changes in inventories are associated with changes in shipments, though not always by any fixed amount or ratio. Obviously, also, inventory changes anticipate sales fluctuations to the extent that it is possible to project them with reasonable accuracy, though not always by the same time lag.

Weighed against the line of relationship between inventories and sales which obtained before the war, total manufacturers' holdings are not unduly out of balance. However, as pointed out before, there is a definite lack of uniformity. Stocks of finished goods have not risen sufficiently to reflect the higher prices. Undoubtedly some further rise is to be expected, although movements in shipping stocks figures are never large.

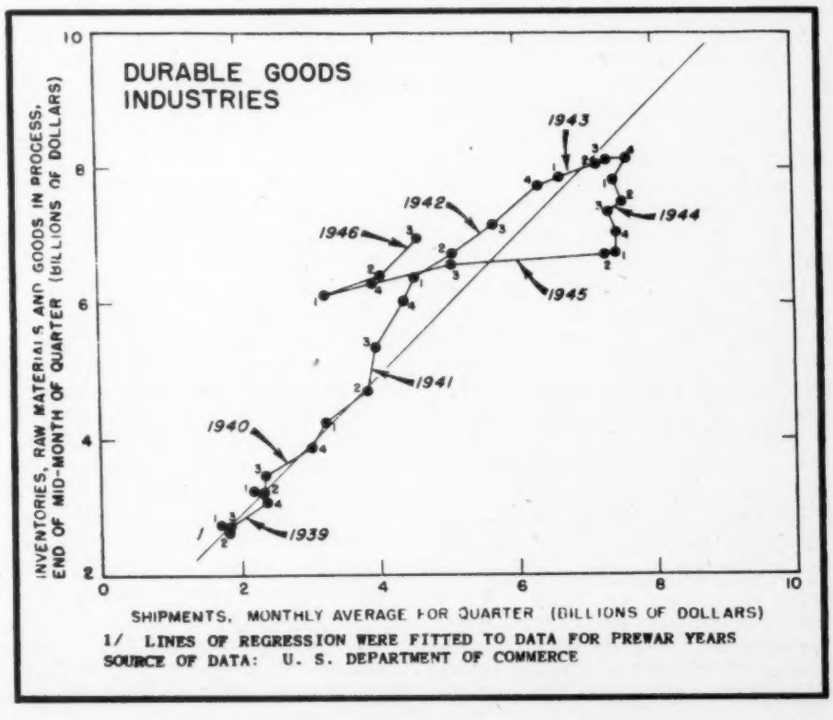
The level of goods-in-process inventory, when related to shipments, shows an approximate balance even after the recent sharp rise. (See Chart 2.) Business management, as a rule, does not invest money for labor and overhead costs in processing purchased materials unless reasonably confident that the output will flow on into sales. Though the relationship of working-in-process to shipments, even during the war period, is close, the normal rate of increase in stocks is much slower than that of shipments as the slope of the "regression line" on the chart shows. A rise of $2 billion in shipments has been associated with an increase of only about $800 million in inventories.

The value of raw or purchased material holdings, on the other hand, has reached a new peak with shipments still below earlier levels and now stands well above the line of relationship also shown on Chart 2. Manufacturers appear to be anticipating a level of shipments equal to or in excess of the wartime peak; in terms of present volume of shipments, these inventories are high. With respect to certain components and critical materials, this may not hold true and the lack of balance in stocks which prevents smooth production is a big factor in the current low output and low productivity of labor. Apparently, the lag in production time between purchased materials and finished goods has been extended to allow for contingencies such as strikes, material shortages and price changes.

In the aggregate, manufacturers' inventories are not excessive in view of the volume of business expected for the early part of 1947. However, should sales volume fail to materialize, trouble could quickly develop, particularly since the time lag has become unusually long to hedge against production uncertainties coincident with high output. It is of extreme importance for the future therefore, that purchases, and particularly commitments, be checked frequently against the latest sales anticipations.

The sales-inventory situation as between industries and industry

Chart 3. Relationship between manufacturers' inventories and shipments, all durable goods industries



1/ LINES OF REGRESSION WERE FITTED TO DATA FOR PREWAR YEARS
SOURCE OF DATA: U. S. DEPARTMENT OF COMMERCE

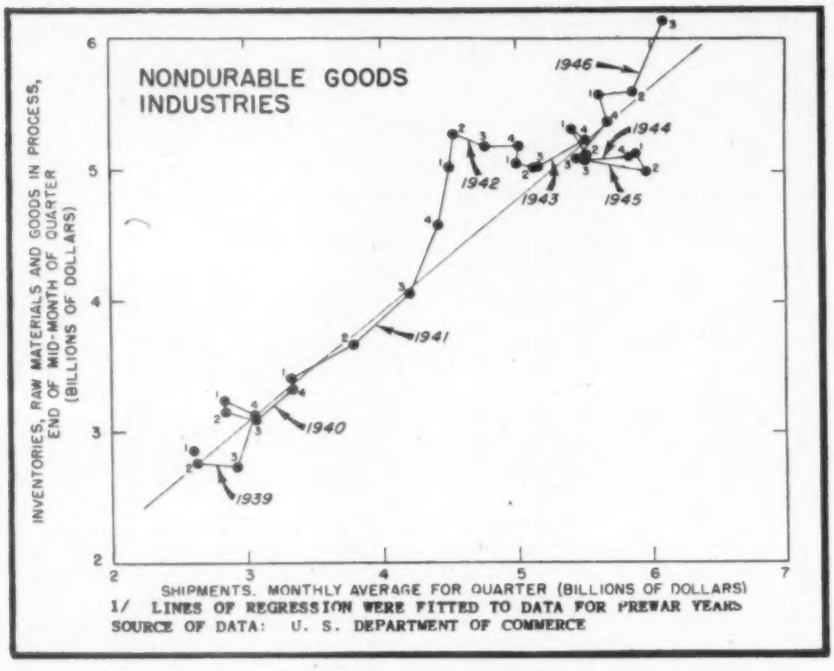

NONDURABLE GOODS INDUSTRIES
INVENTORIES, RAW MATERIALS AND GOODS IN PROCESS, END OF MID-MONTH OF QUARTER (BILLIONS OF DOLLARS)
SHIPMENTS, MONTHLY AVERAGE FOR QUARTER (BILLIONS OF DOLLARS)
1939
1940
1941
1942
1943
1944
1945
1946
1/ LINES OF REGRESSION WERE FITTED TO DATA FOR PREWAR YEARS
SOURCE OF DATA: U. S. DEPARTMENT OF COMMERCE

Chart 4. Relationship between manufacturers' inventories and shipments, all nondurable goods industries

groups is not uniform. The difference in pattern during the 1939-46 period between the durable and nondurable industry groups is pictured in Charts 3 and 4.

Combined working stocks (raw materials and goods-in-process) of durable manufacturers (Chart 3) are still below the wartime peak but are at the same time considerably in excess of requirements based on current shipments. However, shipments are also relatively low, and are expected to rise markedly as output reaches more normal proportions. In light of anticipated shipments, present holdings are probably warranted, but the extended time lag is noticeable.

In the nondurable industries (Chart 4) conversely, both inventories and shipments are high — above previous peak levels. The sharp rise in stocks of the past quarter carried the total somewhat above the line of relationship. However, there is as yet no great disparity so long as sales continue to be maintained. The real test will come with the expansion of durable goods output — can sales of these goods be made without disturbing the sales of nondurable goods.

Inventories and the Price Rise

During the past few months when inventories were rising rapidly, prices also advanced. The most persistent question is: how much of the inventory increase was price and how much represented larger physical stocks? To this, there is no definite answer. Undoubtedly some of the rise was purely price, but it is impossible to determine the amount. There are several methods presently used by business accounting to value the inventory, each of which might yield a different average price for existing stocks. Furthermore, a good part of the value arises from cost of labor and direct overhead applicable to the goods-in-process and finished goods which may not have changed materially over the recent period. A third ununknown is the time interval in converting purchased materials into finished goods shipments — the inventory turnover period. There is no way to ascertain how much of the inventory was replaced during this period.

From the standpoint of the analysis of the current inventory position as related to shipments, however, the price problem makes little difference. Any increase in prices which affects inventories will be reflected in shipments. The question of inventory adequacy — whether stocks are low or high in relation to shipments — can be judged in current price terms without reference to price changes.

Quite apart from the question of adequacy in the present sales-inventory relationship, there are two points of emphasis. Inventories will undoubtedly increase further, if merely in the process of achieving balance and building distributors' stocks. How much inventory will be added and in what period of time are imponderables; certainly a top-heavy position could be reached very quickly at the third quarter rate. The major problem in this connection concerns the rise in sales which must accompany the increased stocks if a position of over-all balance is to be maintained.

The second point is that of economic implication. In the realm of economic significance, the danger inherent in a period involving an increase in inventories is that it leads almost inevitably to a subsequent lowering of the level output. Whenever a part of current production is channeled into stocks, the amount available for consumption is reduced. This exerts an upward pressure on prices because of the relatively short supply situation created, and on output in an effort to increase the supply. When inventories stop rising, the pressure is removed and unless outside forces act to increase consumption, output quickly becomes adequate and prices less firm.

The real damage in the past has been that in this adjustment process, current output is usually discovered to be more than adequate when inventory building subsides. Furthermore, the expansion in consumption needed to offset the loss of inventory buying is seldom timed so as to neatly counteract any deflationary impact. Hence, prices drop in an attempt to move output into consumption, and inventories once considered inadequate are now suspect or may prove too high. A recession in output, employment and income normally ensues.

A further danger is that some time during the process the increase in inventories may shift quickly from a voluntary to an involuntary accumulation because buying slackens, or increases less than anticipated. Under these circumstances much the same economic reaction as described above develops, but perhaps to a more striking degree. Thus, in any period of rising inventories, particularly in one of a rapid increase, the problem is one of attempting to moderate the severity of the subsequent decline, and to determine, insofar as possible, the timing of the downturn.

This, then, is the challenge—the test of the purchasing agent — to keep a smooth flow of materials into

(*Continued on page* 320)

Lieutenant Colonel Weldon B. Gibson is currently serving as Dean of the Army Air Forces Institute of Technology at Wright Field, Dayton, Ohio. His prior assignment was as Director of Requirements, Air Materiel Command, Army Air Forces, a key position in the procurement program during the wartime and postwar transition phases. He is well known for his writings in the field of military logistics, in both magazine and book form.

STOCK CONTROL FOR PROCUREMENT IN THE ARMY AIR FORCES

By Weldon B. Gibson

Featuring an integrated system of local stock control, statistical reporting, requirements projections, and management summaries.

DURING World War II approximately 70,000 separate industrial and commercial organizations in the United States were engaged at various times in the production and delivery of spare parts, supplies and equipment to the Army Air Forces. At the present time, this group constitutes about 7,000 individual suppliers. The number is expected to increase as current industrial planning activities are executed and concurrently with the increased emphasis on bid contracts rather than negotiated procurements. The annual wartime outlay by the Army Air Forces for such items involved a fiscal program of approximately $5,000,000,000. At the present time a planned program of $300,000,000 yearly is expected to prevail. The total number of stock items concerned approximates 600,000 including interchangeable and substitute numbers, grouped into 85 property classifications from commercial hardware to complicated special tools. The planned AAF inventory program involves a working investment of approximately $4,000,000,000 with 20,000 to 25,000 items outstanding on procurement as of any given time.

Planned Procurement

It is readily evident that the peacetime procurement of the Army Air Forces is expected to represent a very sizeable relative volume, affecting in one form or another a large number of American industrial units. Therefore, it is pertinent to examine in some detail the policies and detail method of stock control for procurement requirements now being practiced by the Army Air Forces. This discussion is in no respect a historical review of past practices or an outline of planned procedures.

The current military practice of stock control for procurement in the Army Air Forces is similar to methods existing in any large industrial concern. There are, however, certain features of the plan which are peculiar to military practice and which should be of interest to the purchasing profession. It is entirely possible that certain specific components of the system may suggest a new approach to the problem of procurement control in present industrial and commercial organizations.

The principal features of the Army Air Forces system of stock control for procurement requirements may be categorized as follows:

(1) Division of items into homogeneous property classifications.
(2) Maintenance of local control by use of an integrated system of stock record and activity cards.
(3) Utilization of a combination form for requisitioning and shipping (order-invoice).
(4) Periodic statistical reporting of stock control data from all locations to a central control agency.
(5) Maintenance of summary stock control data on a Requirements Ledger for purposes of computation of future needs.
(6) Projection of future requirements for all items based upon one or more planning programs.
(7) Initiation of Procurement Requirements on Purchase Requests to contracting personnel.
(8) Periodic preparation of stock control summaries for management.

With these major components in mind, we turn to a more detailed discussion of the integrated system evolved to provide a basic control for the determination of future AAF purchasing requirements.

Stock Record

The primary purpose of maintaining a stock record account for individual supply items at each stockage point is to:

(1) Permit the establishment of a control over local stock levels.
(2) Record receipts, issues, and

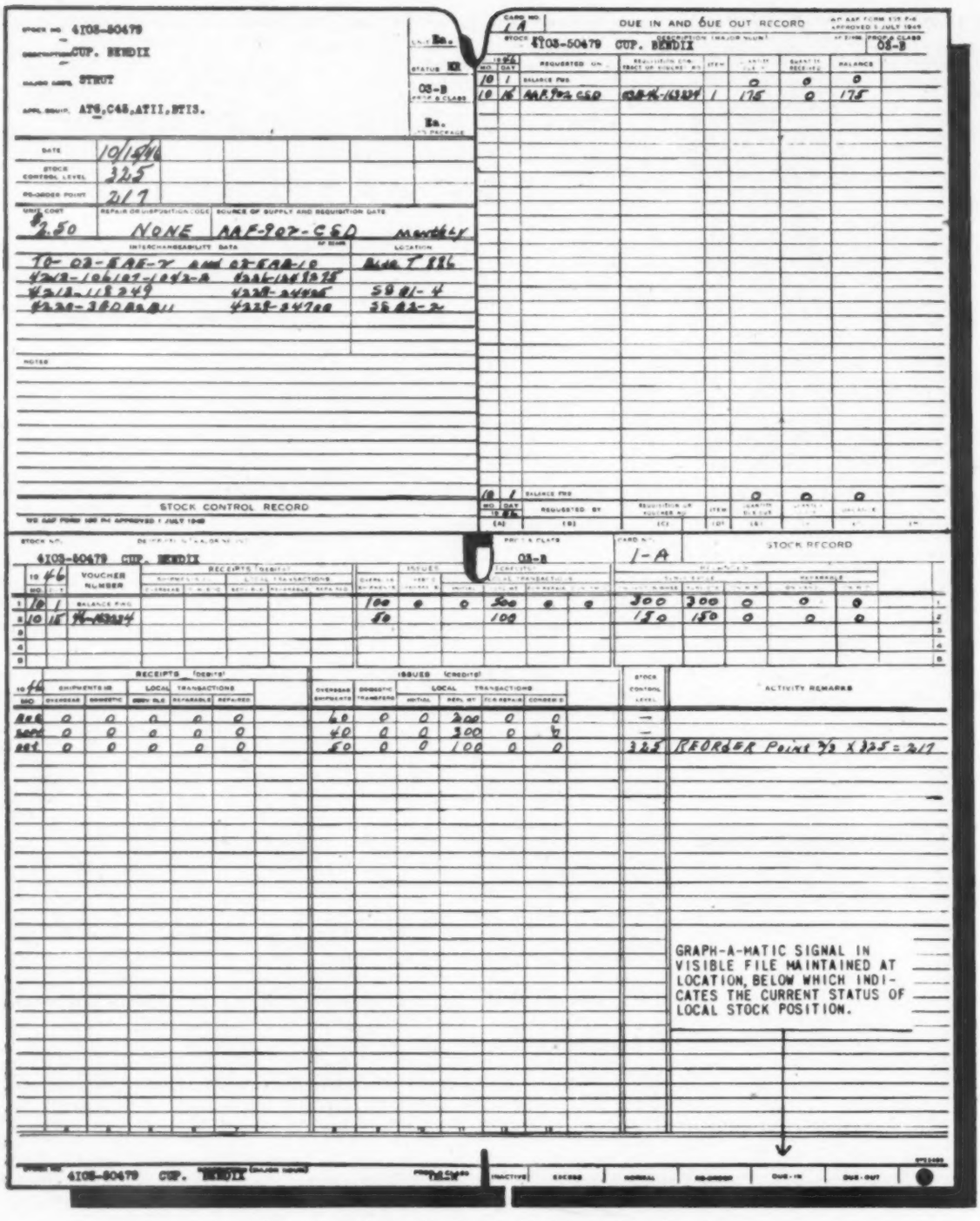

4103-80479
CUP, BENDIX
STRUT
AN6,C48,AT11,BT15.
STOCK CONTROL RECORD
DUE IN AND DUE OUT RECORD
4103-80479 CUP. BENDIX
STOCK RECORD
GRAPH-A-MATIC SIGNAL IN VISIBLE FILE MAINTAINED AT LOCATION, BELOW WHICH INDICATES THE CURRENT STATUS OF LOCAL STOCK POSITION.

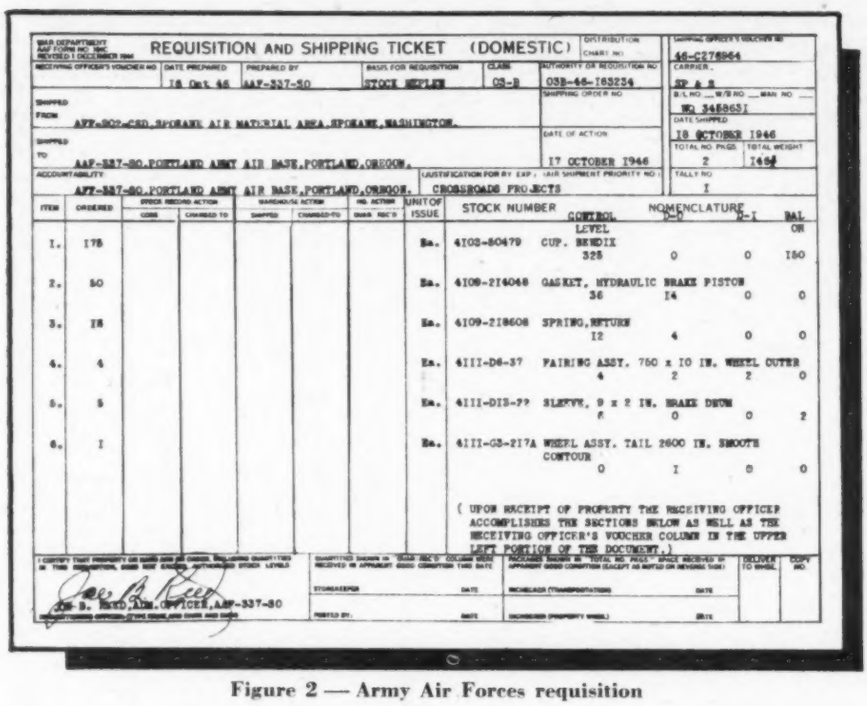
Figure 1 — Army Air Forces stock record card system

transfers of supplies in such a manner that the quantity on hand can always be readily ascertained; also that the quantities so recorded will reflect an accurate statistical figure which may be used to anticipate future requirements.

(3) Maintain a record of fiscal responsibility.

The stock record card utilized to achieve this purpose is composed of four parts contained in a single visible file pocket. These components of the stock record control at individual stockage points are indicated in Figure 1. The first card is permanent in nature and is utilized to record the full stock number, nomenclature and description, interchangeability, locations, control levels, reorder points, and other necessary information. The balance of the four forms are self-explanatory. It is desired to indicate the accounting concept and terminology utilized in the record wherein changes to the on-hand balance are classified as to "debits" and "credits".

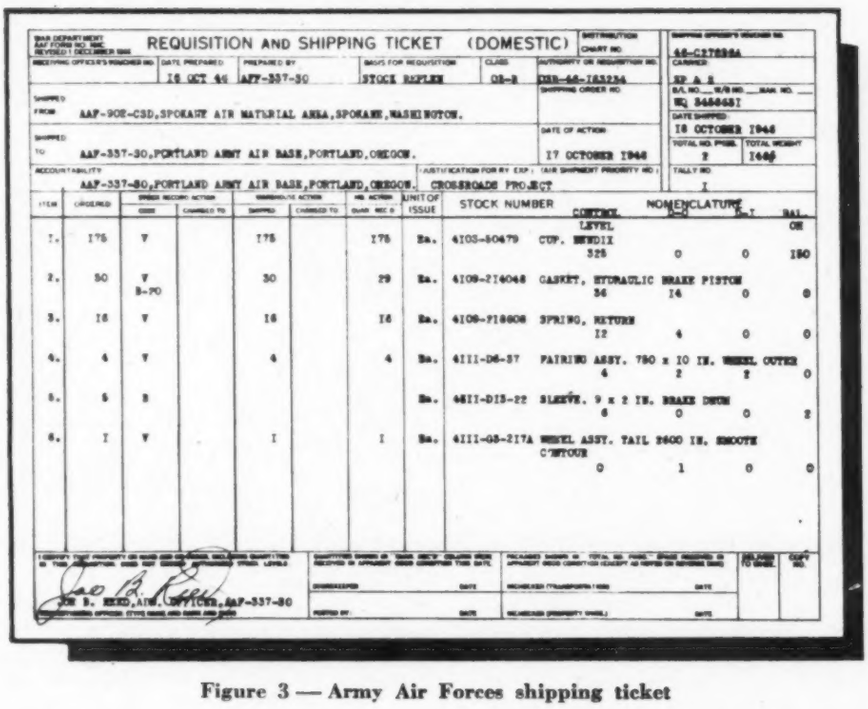
The standard procedure for the determination of local stock control levels for forty-five days supply is to multiply the past ninety days issue figure by two, thereby basing successive stock levels on a moving average of issues. The standard procedure for the similar computation of a sixty day local stock level is to multiply the ninety day past issue quantity by two-thirds. The actual calculation of such individual stock



REQUISITION AND SHIPPING TICKET (DOMESTIC)

ITEM	ORDERED	STOCK NUMBER	NOMENCLATURE	UNIT OF ISSUE	CONTROL LEVEL	D-O	D-I	BAL. ON
1.	175	4103-80479	CUP, BENDIX	Ea.	325	0	0	150
2.	50	4109-214048	GASKET, HYDRAULIC BRAKE PISTON	Ea.	36	14	0	0
3.	18	4109-218608	SPRING, RETURN	Ea.	12	4	0	0
4.	4	4111-D6-37	FAIRING ASSY. 750 x 10 IN. WHEEL OUTER	Ea.	4	2	2	0
5.	5	4111-D13-22	SLEEVE, 9 x 2 IN. BRAKE DRUM	Ea.	6	0	0	2
6.	1	4111-G3-217A	WHEEL ASSY. TAIL 2600 IN. SMOOTH CONTOUR	Ea.	0	1	0	0

Figure 2 — Army Air Forces requisition



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5.	5	4111-D13-22	SLEEVE, 9 x 2 IN. BRAKE DRUM	Ea.	6	0	0	2
6.	1	4111-G3-217A	WHEEL ASSY. TAIL 2600 IN. SMOOTH CONTOUR	Ea.	0	1	0	0

Figure 3 — Army Air Forces shipping ticket

levels is reduced to the selection of a pre-calculated quantity from a stock control table with the two variables, days and issues, along the two axes of the table.

For the majority of items the above local stock level procedure is satisfactory. However experience has proved that issue activity of various items will occur in cycles of varying lengths. A disregard of such cyclical changes will create temporary excesses or shortages of stock at a given location. To eliminate this condition and to facilitate the calculation of local stock control levels, a two year stock activity record is provided as a portion of the total stock record card. The columns on the middle stock record card are periodically summarized and the results entered on the appropriate columns of the lower stock activity record. The entries on the stock activity record must be completed each month prior to the scheduled statistical reporting to the centralized stock control agency.

All transactions affecting the stock status of any given item are posted to the stock record card prior to the actual physical selection or movement of stock. As a result of this prior posting and the fact that processing of stock control papers can be accomplished more rapidly than selection and movement of physical property, there never is an appreciable backlog of unposted documents creating a temporary divergence of actual available and stock record balances. It is significant to note that the maintenance of the stock record system can be accomplished by mechanical means; however, actual practice has indicated that a visible file, hand posted system is the more desirable.

The actual examples indicated in Figure 1 are believed to be self-explanatory. The stock record card indicates that the time has arrived for an additional requisition of "Due In" to be created in order to raise the stock on hand to the local stock level. The computed "Due In" has been posted in the proper quantity.

Requisitioning

Replenishment requisitions for supplies and equipment are submitted by individual stockage activities in accordance with predetermined time schedules. Emergency requisitions may be forwarded during the interim between requisition dates. Each requisition is prepared on a standard "Requisition and Shipping Ticket". This form constitutes not only the requisition but also the invoice or shipping ticket which is returned by the shipper to the requisitioning activity both by mail and attached to the shipment.

This combination "Requisition and Shipping Ticket" is composed of a Master Ditto form with provisions for insertion of extra carbon copies at the time of preparation by the requisitioning activity. At the designated point of receipt of the requisition, the necessary stock control recording action is accomplished on the stock record card (Figure 1), entries made on the combination form and the necessary number of copies required to accomplish shipment reproduced. This procedure, therefore, eliminates the necessity for the repreparation of the shipping ticket, locator sheet, packing list and other forms required to accomplish the varieties of situations which may arise in such a transaction.

Replenishment requisitions are submitted for only those items

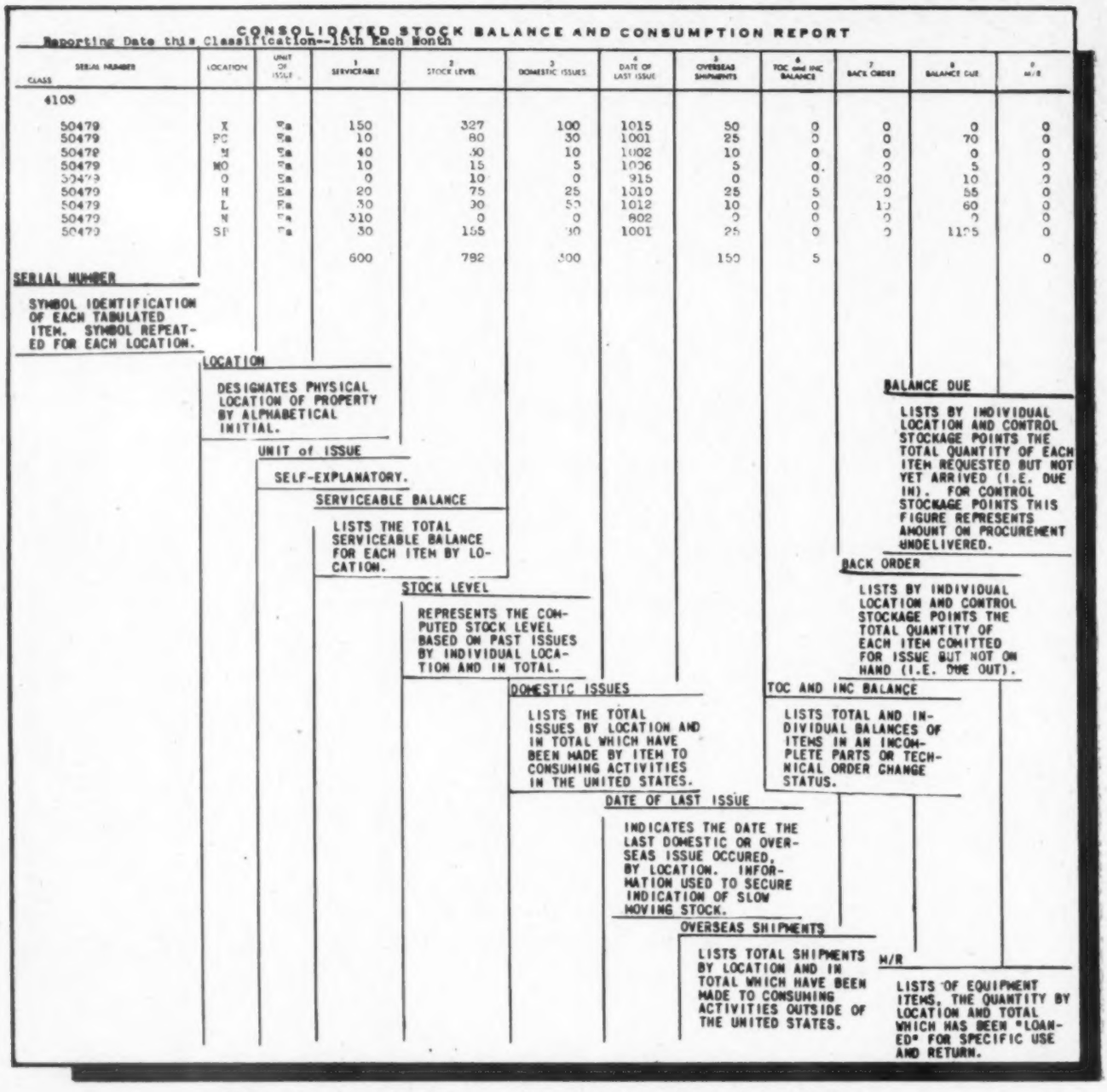

CONSOLIDATED STOCK BALANCE AND CONSUMPTION REPORT
Reporting Date this Classification--15th Each Month
SERIAL NUMBER
CLASS
LOCATION
UNIT OF ISSUE
1 SERVICEABLE
2 STOCK LEVEL
3 DOMESTIC ISSUES
4 DATE OF LAST ISSUE
5 OVERSEAS SHIPMENTS
6 TOC and INC BALANCE
7 BACK ORDER
8 BALANCE DUE
9 M/R
4103
50479 X Ea 150 327 100 1015 50 0 0 0 0
50479 PC Ea 10 80 30 1001 25 0 0 70 0
50479 M Ea 40 50 10 1002 10 0 0 0 0
50479 MO Ea 10 15 5 1006 5 0 0 5 0
50479 O Ea 0 10 0 915 0 0 20 10 0
50479 H Ea 20 75 25 1010 25 5 0 55 0
50479 L Ea 30 30 50 1012 10 0 10 60 0
50479 N Ea 310 0 0 802 0 0 0 0 0
50479 SP Ea 30 155 30 1001 25 0 0 1105 0
600 782 300 150 5 0
SERIAL NUMBER
SYMBOL IDENTIFICATION OF EACH TABULATED ITEM. SYMBOL REPEATED FOR EACH LOCATION.
LOCATION
DESIGNATES PHYSICAL LOCATION OF PROPERTY BY ALPHABETICAL INITIAL.
UNIT of ISSUE
SELF-EXPLANATORY.
SERVICEABLE BALANCE
LISTS THE TOTAL SERVICEABLE BALANCE FOR EACH ITEM BY LOCATION.
STOCK LEVEL
REPRESENTS THE COMPUTED STOCK LEVEL BASED ON PAST ISSUES BY INDIVIDUAL LOCATION AND IN TOTAL.
DOMESTIC ISSUES
LISTS THE TOTAL ISSUES BY LOCATION AND IN TOTAL WHICH HAVE BEEN MADE BY ITEM TO CONSUMING ACTIVITIES IN THE UNITED STATES.
DATE OF LAST ISSUE
INDICATES THE DATE THE LAST DOMESTIC OR OVERSEAS ISSUE OCCURED, BY LOCATION. INFORMATION USED TO SECURE INDICATION OF SLOW MOVING STOCK.
OVERSEAS SHIPMENTS
LISTS TOTAL SHIPMENTS BY LOCATION AND IN TOTAL WHICH HAVE BEEN MADE TO CONSUMING ACTIVITIES OUTSIDE OF THE UNITED STATES.
TOC AND INC BALANCE
LISTS TOTAL AND INDIVIDUAL BALANCES OF ITEMS IN AN INCOMPLETE PARTS OR TECHNICAL ORDER CHANGE STATUS.
BACK ORDER
LISTS BY INDIVIDUAL LOCATION AND CONTROL STOCKAGE POINTS THE TOTAL QUANTITY OF EACH ITEM COMITTED FOR ISSUE BUT NOT ON HAND (I.E. DUE OUT).
BALANCE DUE
LISTS BY INDIVIDUAL LOCATION AND CONTROL STOCKAGE POINTS THE TOTAL QUANTITY OF EACH ITEM REQUESTED BUT NOT YET ARRIVED (I.E. DUE IN). FOR CONTROL STOCKAGE POINTS THIS FIGURE REPRESENTS AMOUNT ON PROCUREMENT UNDELIVERED.
M/R
LISTS OF EQUIPMENT ITEMS, THE QUANTITY BY LOCATION AND TOTAL WHICH HAS BEEN "LOANED" FOR SPECIFIC USE AND RETURN.

Figure 4 — Army Air Forces stock statistical reporting, serviceable items

where the serviceable balance on hand at the requesting activity is less than the reorder point. The quantity to be requisitioned is determined as follows:

(*Stock Control Level* plus *Due Outs*) minus (*Due Ins* plus *Balance on Hand*) equals *Amount to be Requisitioned*

Using the figures shown as entries on the form illustrated, this equation is worked out as follows:

$(325 + 0) - (0 + 150) = 175$

The reorder point is considered to be a quantity two-thirds of the control level; hence when the stock on hand at an activity falls below the reorder point, the above computation of the amount to be requisitioned is accomplished.

In the placement of a requisition all possible assets are considered. Those assets may include (in addition to serviceable and reparable balances) certain items now in the process of repair, quantities estimated to be returned serviceable from maintenance operations during the period of time covered by the requisition, and possible increases in stock from any other non-requisition source. These estimated quantities are considered as additional due-ins and hence deducted from the actual quantity to be requisitioned.

The preparing or requisitioning activity does not record any entries in the columns indicated "Stock Record Action", "Warehouse Action", "Hdq. Action" in Figure 2, ("Requisitioning and Shipping Ticket"). These spaces are reserved for action by the shipping or requisition-action stock control agency. A comparison of the basic order-invoice form both before and after stock control action on the part of the supplying agency is indicated by the association of Figures 2 and 3.

Correlating the Records

Upon receipt of a properly authenticated requisition by a supply-

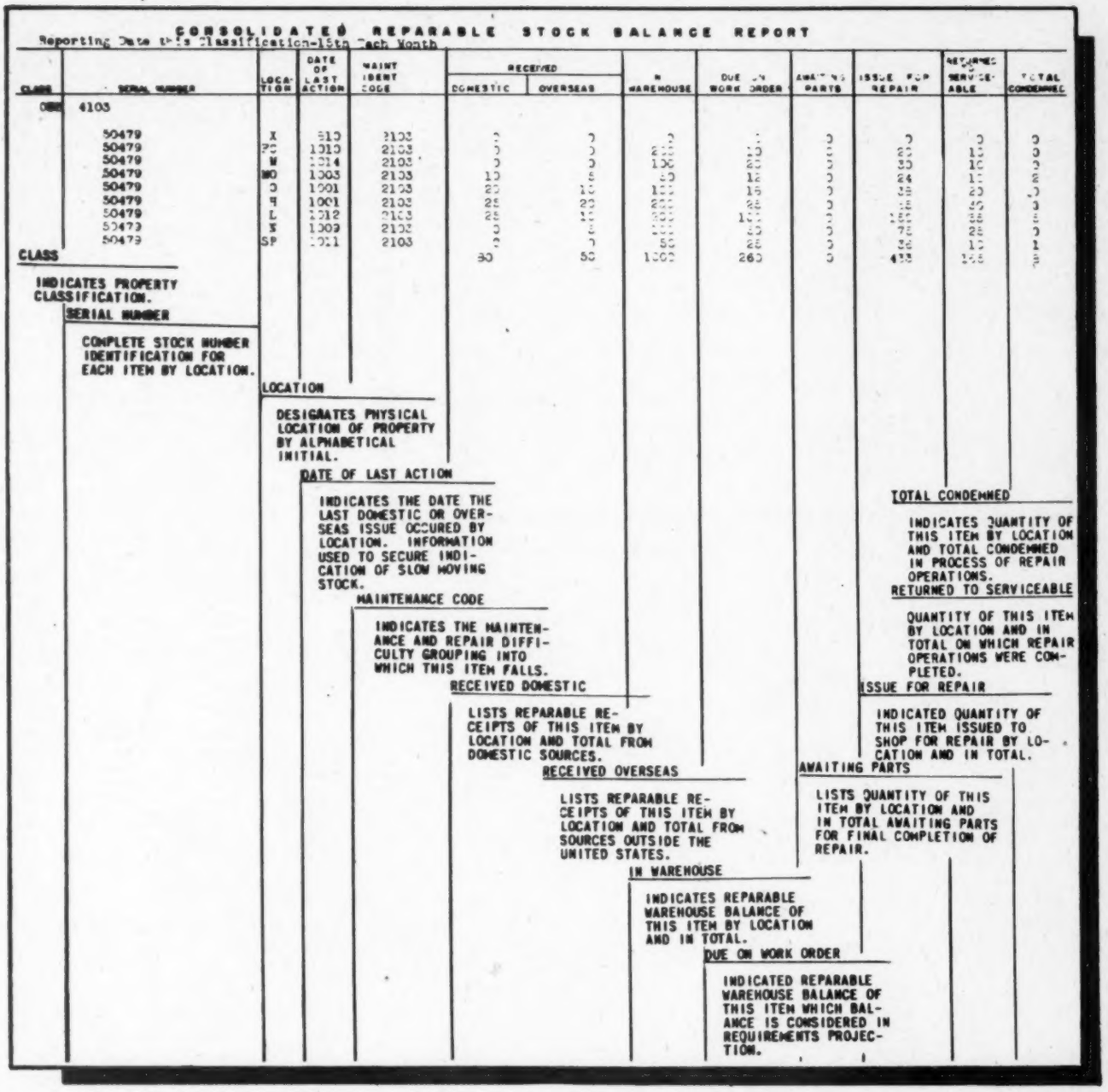

CONSOLIDATED REPARABLE STOCK BALANCE REPORT
Reporting Date this Classification-15th Each Month
CLASS
SERIAL NUMBER
LOCATION
DATE OF LAST ACTION
MAINT IDENT CODE
RECEIVED
DOMESTIC
OVERSEAS
IN WAREHOUSE
DUE ON WORK ORDER
AWAITING PARTS
ISSUE FOR REPAIR
RETURNED TO SERVICEABLE
TOTAL CONDEMNED
CLASS
INDICATES PROPERTY CLASSIFICATION.
SERIAL NUMBER
COMPLETE STOCK NUMBER IDENTIFICATION FOR EACH ITEM BY LOCATION.
LOCATION
DESIGNATES PHYSICAL LOCATION OF PROPERTY BY ALPHABETICAL INITIAL.
DATE OF LAST ACTION
INDICATES THE DATE THE LAST DOMESTIC OR OVERSEAS ISSUE OCCURED BY LOCATION. INFORMATION USED TO SECURE INDICATION OF SLOW MOVING STOCK.
MAINTENANCE CODE
INDICATES THE MAINTENANCE AND REPAIR DIFFICULTY GROUPING INTO WHICH THIS ITEM FALLS.
RECEIVED DOMESTIC
LISTS REPARABLE RECEIPTS OF THIS ITEM BY LOCATION AND TOTAL FROM DOMESTIC SOURCES.
RECEIVED OVERSEAS
LISTS REPARABLE RECEIPTS OF THIS ITEM BY LOCATION AND TOTAL FROM SOURCES OUTSIDE THE UNITED STATES.
IN WAREHOUSE
INDICATES REPARABLE WAREHOUSE BALANCE OF THIS ITEM BY LOCATION AND IN TOTAL.
DUE ON WORK ORDER
INDICATED REPARABLE WAREHOUSE BALANCE OF THIS ITEM WHICH BALANCE IS CONSIDERED IN REQUIREMENTS PROJECTION.
AWAITING PARTS
LISTS QUANTITY OF THIS ITEM BY LOCATION AND IN TOTAL AWAITING PARTS FOR FINAL COMPLETION OF REPAIR.
ISSUE FOR REPAIR
INDICATED QUANTITY OF THIS ITEM ISSUED TO SHOP FOR REPAIR BY LOCATION AND IN TOTAL.
RETURNED TO SERVICEABLE
QUANTITY OF THIS ITEM BY LOCATION AND IN TOTAL ON WHICH REPAIR OPERATIONS WERE COMPLETED.
TOTAL CONDEMNED
INDICATES QUANTITY OF THIS ITEM BY LOCATION AND TOTAL CONDEMNED IN PROCESS OF REPAIR OPERATIONS.

Figure 5 — Army Air Forces stock statistical reporting, reparable items

ing or action agency, the additional entries contained on Figure 3 are accomplished and the pertinent stock control information recorded on the local Stock Record Cards as previously outlined. This process will normally require only a few minutes per requisition including the reproduction of shipping or action copies, thereby enabling the immediate transfer of the copies to the appropriate warehouse for action. It should be noted that the maintenance of such stock records near the physical location of homogeneous properties eliminates the requirement for maintenance of subsidiary bin card records.

In the instance of shipments arriving at a destination, the forwarded copies of the combination "Requisition and Shipping Ticket" are utilized as a receiving document. In those instances of receipt direct from vendors involving other invoice or shipping forms, a standard receiving report must be accomplished. The combination form, therefore, eliminates the second re-preparation of the same basic stock control information and consequently creates a situation throughout the entire operation in which errors of identification, transposition of numbers, misspelling, etc., cannot occur.

In the example cited in Figures 2 and 3, the first item has been requested in a quantity of 175, all of which has been shipped and received. In the case of the second item, 30 items were indicated as shipped and 20 backordered for later shipment; however, only 29 were received, thereby necessitating tracer action. Item No. 5 on Figure 1 was backordered in entirety and a copy of the basic form routed to the backorder file for subsequent shipping action.

In the event it becomes necessary to extract certain items on a given requisition to higher supply or stock control echelons for action, extra

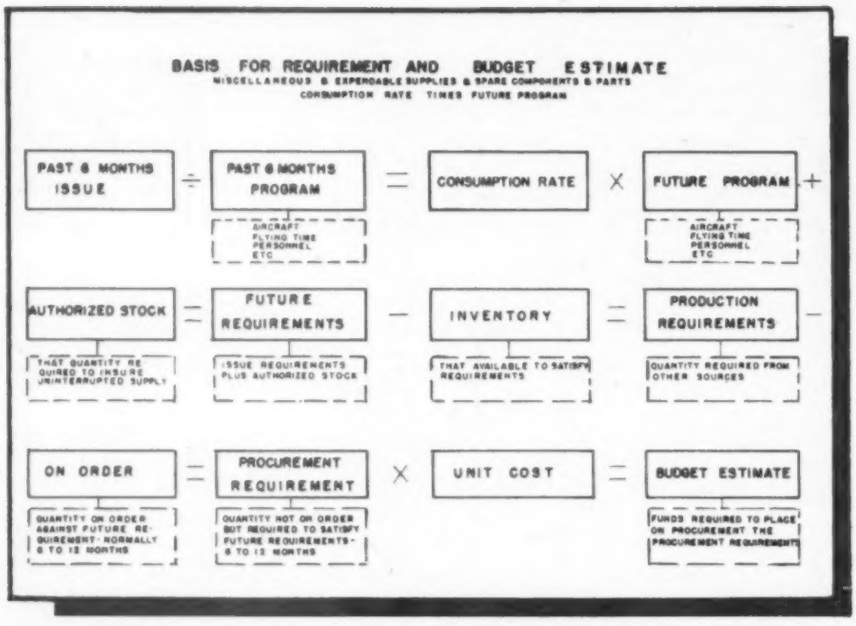


Figure 6—Army Air Forces requirements computation formula

copies of the form are prepared, marked "action" and forwarded to the appropriate agency. Action on the balance of a given requisition proceeds in the normal course with an "X" by the appropriate item indicating to the receiver that further action will be forthcoming. This action is later indicated in the column headed "Hq. Action-Quantity Received", which column is arranged for a dual purpose.

The preparation of all identifying and nomenclature information for a given item on addressograph plates followed by a selection process and mechanical listing on the requisition form further reduces the occurrence of clerical errors. It is pertinent to note that the operation of such an integrated requisitioning-shipping-receiving system permits the accomplishment of complete supply action (including actual shipping) by a stockage point within 24 hours after receipt of a request. Emergency requests are often shipped within an hour after receipt of the requisition.

The example cited in Figures 1 and 2 is contained on a "Domestic" Form. A similar procedure exists for overseas use, the difference in the basic procedure being sufficient to require a slight redesign of the form. The principles of stock control operation involved in the two plans are identical.

Statistical Reporting

The above discussion has outlined the basic stock accounting system for maintenance of stock control in and between the many stockage points of the Army Air Forces. It is necessary, however, for certain statistical information to be secured periodically from the source stock record cards and assembled in mass at a centralized point (Wright Field, Dayton, Ohio). This statistical data is then utilized for the purpose of redistribution, action on extracted requisitions and the determination of future Army Air Forces anticipated procurement, cancellation or disposal requirements.

At a designated time each month, tabulated lists of all items reported as being on hand by a given activity the previous reporting date are forwarded to each stock record account by the centralized statistical agency. In actual practice, the preparation of these tabulated run-offs is decentralized to subordinate agencies. To this list of items, the reporting agency adds any new items now contained on record but not on the run-off list and deletes those no longer on stock record but still on the list of the previous month. On a definite date and hour, the local stock control activity enters on the preprinted list alongside each item the current statistical stock control data. A separate reporting is accomplished for reparable and serviceable items.

The tabulated lists are then card punched, and a summary listing of all items by individual location and status is prepared. An example of such a consolidated statistical report is shown in Figure 4 for serviceable items and Figure 5 for reparable items. The reduction of such stock control statistical data to tabulating cards also permits the preparation of subsidiary summaries and reports other than the basic data presented in this discussion. For example, each control stockage point secures a similar consolidated summary for individual accounts in its geographical area. It is evident from a review of the consolidated summary that the document serves not only as a source of statistical data for future requirements computations but also as a means of scrutiny of the individual location and consolidated stock position of any one item as of a given date.

Computation of Procurement Requirements

Based upon the individual location stock control and the statistical data described above, we come now to the processes involved in the projection of future requirements for the purpose of determining procurement, disposal, cancellation, or other stock control action.

It is accepted procedure in commercial concerns to gauge past sales activity and project future sales possibilities in terms of quantities of given items per day, week, month, or year. The actual projection of future sales is predicated upon an analysis of the past sales activity per given time periods. Such factors as the type of market available, population densities and trends, style changes, forecasts of income, mangement policies, weather conditions, advertising program, seasonal fluctuation, governmental influence, and many other affecting circumstances are applied in the form of a buyer's judgment to the basic sales rate for the base period selected.

In commercial practices concerning the determination of manufacturing components of raw materials, it is possible to predicate future requirements upon a given manufacturing program expressed in terms of volume or units. In a military service an opportunity is afforded to prepare a future program of activity similar to an industrial production or commercial sales schedule upon which the future requirements for materiel may be predicated.

The comparable gauge of stock activity in military logistical activities to the "sales rate" or "rate of issue" of commercial practice is known as a "consumption rate". A consumption rate is the estimated average expenditure, issue, or consumption of various items of materiel or supplies per month or

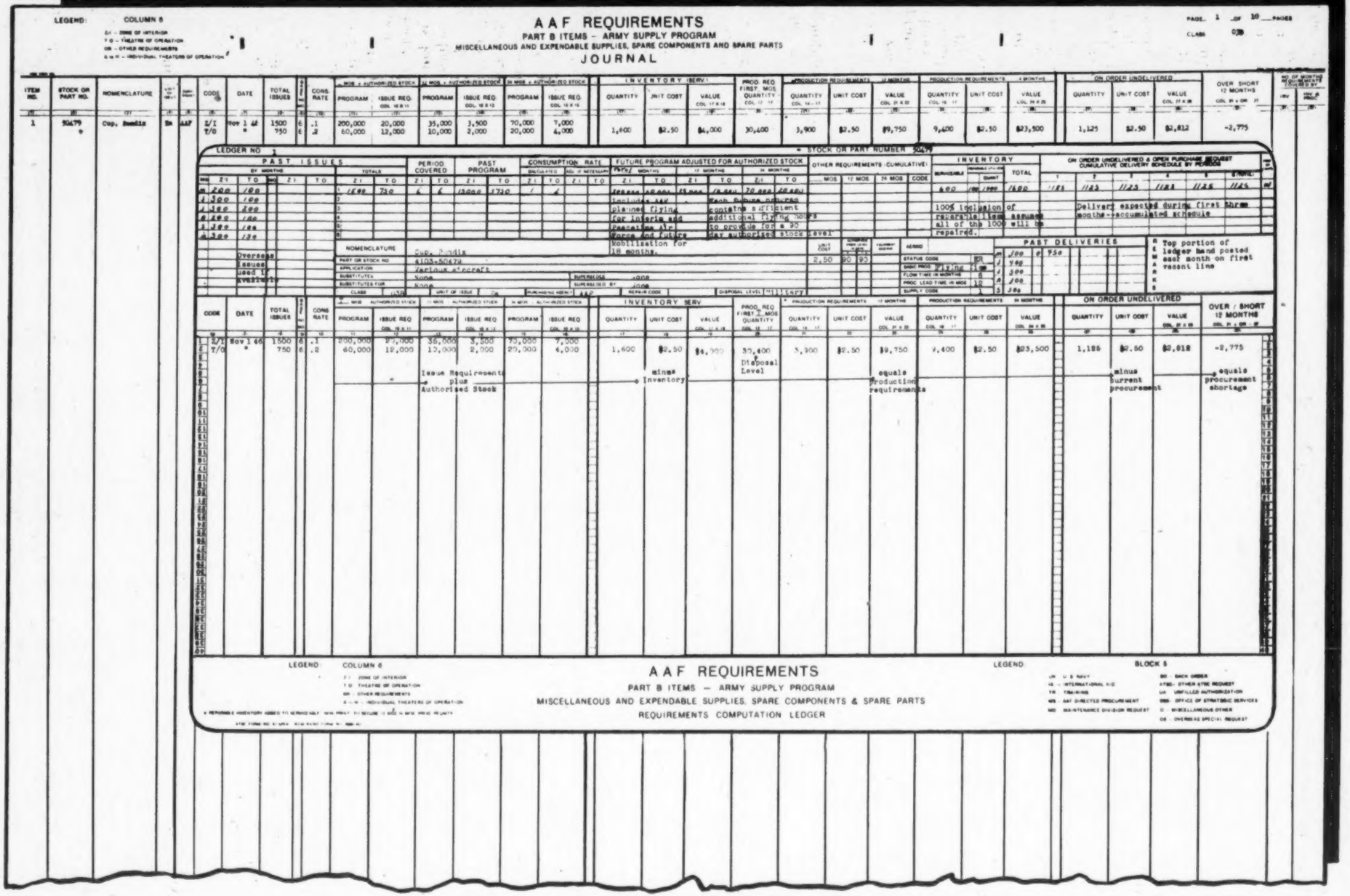

AAF REQUIREMENTS
PART B ITEMS – ARMY SUPPLY PROGRAM
MISCELLANEOUS AND EXPENDABLE SUPPLIES, SPARE COMPONENTS AND SPARE PARTS
JOURNAL
LEGEND: COLUMN 6
ZI – ZONE OF INTERIOR
TO – THEATRE OF OPERATION
OR – OTHER REQUIREMENTS
A to H – INDIVIDUAL THEATERS OF OPERATION
PAGE 1 OF 10 PAGES
CLASS 030
ITEM NO. 1
STOCK OR PART NO. 50479
NOMENCLATURE Cup, Bendix
UNIT OF ISSUE Ea
CLASS AAF
CODE I/I T/O
DATE Nov 1 46 *
TOTAL ISSUES 1500 750
CONS RATE 6 .1 6 .2
MOS x AUTHORIZED STOCK: PROGRAM 200,000 60,000; ISSUE REQ. 20,000 12,000
36 MOS x AUTHORIZED STOCK: PROGRAM 35,000 10,000; ISSUE REQ. 3,500 2,000
24 MOS x AUTHORIZED STOCK: PROGRAM 70,000 20,000; ISSUE REQ. 7,000 4,000
INVENTORY (SERV.): QUANTITY 1,600; UNIT COST $2.50; VALUE $4,000
PROD. REQ. FIRST 7 MOS QUANTITY 30,400
PRODUCTION REQUIREMENTS 12 MONTHS: QUANTITY 3,900; UNIT COST $2.50; VALUE $9,750
PRODUCTION REQUIREMENTS 24 MONTHS: QUANTITY 9,400; UNIT COST $2.50; VALUE $23,500
ON ORDER UNDELIVERED: QUANTITY 1,125; UNIT COST $2.50; VALUE $2,812
OVER SHORT 12 MONTHS -2,775
LEDGER NO 1
STOCK OR PART NUMBER 50479
PAST ISSUES BY MONTHS
PERIOD COVERED 6 6
PAST PROGRAM 13000 1710
CONSUMPTION RATE CALCULATED .1 .2
FUTURE PROGRAM ADJUSTED FOR AUTHORIZED STOCK
6 MONTHS 18,000 10,000
12 MONTHS 18,000 10,000
24 MONTHS 18,000 10,000
Includes AAF planned firing for interim and peacetime Air Forces and future mobilization for 18 months.
Each Supply contains sufficient additional firing tools to produce 100 @ 20 star authorized stock level
OTHER REQUIREMENTS CUMULATIVE: MOS 12 MOS 24 MOS CODE
INVENTORY: SERVICEABLE 600 600 1500; TOTAL 1500
100% inclusion of reparable items assumes all of the 1000 will be repaired.
ON ORDER UNDELIVERED & OPEN PURCHASE REQUEST CUMULATIVE DELIVERY SCHEDULE BY PERIODS
1 1125; 2 1125; 3 1125; 4 1125; 5 1125; 6 1125
Delivery expected during first three months—accumulated schedule
NOMENCLATURE Cup, Bendix
PART OR STOCK NO 4103-50479
APPLICATION Various aircraft
SUBSTITUTES None
SUPERSEDED BY none
SUPERSEDES none
CLASS IIIB
UNIT OF ISSUE Ea
PURCHASING AGENCY AAF
REPAIR CODE
DISPOSAL LEVEL Military
UNIT COST 2.50
STATUS CODE
SHORT PROG 7 MOS
FLOW TIME IN MONTHS 6
PROC LEAD TIME IN MOS 12
SUPPLY CODE
PAST DELIVERIES: M 100 F 750; J 700; J 300; A 100; S 100
Top portion of ledger hand posted each month on first vacant line
CODE I/I T/O
DATE Nov 1 46 *
TOTAL ISSUES 1500 750
CONS RATE 6 .1 6 .2
MOS AUTHORIZED STOCK: PROGRAM 200,000 60,000; ISSUE REQ 20,000 12,000
36 MOS AUTHORIZED STOCK: PROGRAM 35,000 10,000; ISSUE REQ 3,500 2,000
24 MOS AUTHORIZED STOCK: PROGRAM 70,000 20,000; ISSUE REQ 7,000 4,000
INVENTORY SERV: QUANTITY 1,600; UNIT COST $2.50; VALUE $4,000
PROD. REQ FIRST 7 MOS QUANTITY 30,400
PRODUCTION REQUIREMENTS 12 MONTHS: QUANTITY 3,900; UNIT COST $2.50; VALUE $9,750
PRODUCTION REQUIREMENTS 24 MONTHS: QUANTITY 9,400; UNIT COST $2.50; VALUE $23,500
ON ORDER UNDELIVERED: QUANTITY 1,125; UNIT COST $2.50; VALUE $2,812
OVER / SHORT 12 MONTHS -2,775
Issue Requirements plus Authorized Stock
minus Inventory
Disposal Level
equals Production requirements
minus Current procurement
equals procurement shortage
LEGEND: COLUMN 6
ZI – ZONE OF INTERIOR
TO – THEATRE OF OPERATION
OR – OTHER REQUIREMENTS
A to H – INDIVIDUAL THEATERS OF OPERATION
AAF REQUIREMENTS
PART B ITEMS – ARMY SUPPLY PROGRAM
MISCELLANEOUS AND EXPENDABLE SUPPLIES, SPARE COMPONENTS & SPARE PARTS
REQUIREMENTS COMPUTATION LEDGER
LEGEND: BLOCK 5
BO BACK ORDER
OTHER AAF REQUEST
UA UNFILLED AUTHORIZATION
OSS OFFICE OF STRATEGIC SERVICES
O MISCELLANEOUS OTHER
OS OVERSEAS SPECIAL REQUEST

Figure 7 — Army Air Forces requirements computation

other time period expressed in terms of items per applicable base, such as hours of aircraft flying time, number of personnel, number of aircraft, etc. Consumption rates are expressed in terms of parts per aircraft per month, parts per flying hour per month, pieces per man per month, etc. The principal difference between "sales rates" and "consumption rates", therefore, is the fact that a "consumption rate" is a "sales rate" stated in terms of a quantity of using (or buying units).

Two Types of Programs

There are two general types of forward programs available within a military service which may be utilized in the computation of procurement requirements. The first type is known as a status program and includes all planning programs which do not inherently express action or activity but rather establish the status of a given planning element as of a stated date. Aircraft inventory, personnel, and vehicle population projections are examples of status programs. The second type is known as an activity program and involves all planning programs which express activity or action of a given status program. For example, planned flying time (an activity program) expresses the action or activity or aircraft inventory (a status program). For stock control and requirements purposes, an activity program is considered the most satisfactory program base.

The theory and application of consumption rates in the Army Air Forces system of requirements computation is a subject for review in itself. It is sufficient to state here that a *rate* of usage per unit of a program of a given past period is developed and such *rate* applied to the future program of the same type. This action is based upon the general principle that as of any given time the past *rate* of usage of an item of materiel, based upon a representative past period, may be expected to indicate the expected rate of usage which will occur during a given future period. This principle is, of course, not applicable to items of large or costly equipment (which are actually relatively few in number) but is applicable to all miscellaneous equipment, supplies, spare parts, and spare components. The basic formula utilized by the Army Air Forces in the computation of future procurement requirements is outlined in Figure 6.

The requirements computation ledger, pivotal point of the Army Air Forces stock control system, is presented in Figure 7. This ledger has been designed to execute the requirements formula mentioned in Figure 6. It brings together on one central record all of the necessary summary information required to accomplish effective procurement determinations and other materiel control functions. In the example noted in Figure 7, a future procurement requirement is indicated in addition to the quantity already outstanding on order. The example is based upon an assumed manufacturing flow time of six months plus a procurement lead time of six months or a total advance commitment period of twelve months. The explanations contained on the example present the details of the computation including the computation of requirements for a possible future mobilization period.

Accumulating Basic Data

The journal sheet contained in Figure 7, prepared as a by-product of the mechanical preparation of the requirements computation, contains necessary information for the mechanized accumulation of certain statistical data. The dollar value totals noted on the journal are accumulated in the computing machine and totalled out at the end of each journal sheet. An accumulation of this data permits the preparation of management summaries pertaining to the stock control status of all items concerned.

It is now the policy of the Army Air Forces to restrict the advance procurement or commitment of funds for items of materiel to a maximum of twelve months and where feasible to six months. The total procurement quantity expressed in time is always six months longer than the estimated manufacturing flow time. Each time requirement is computed for the immediate future. It is also determined for a future mobilization period of an assumed length. No procurement is currently accomplished for the purpose of fulfilling such mobilization needs, although military items are retained for such need if available in inventory. In order to main-

ORIGINAL

PURCHASE REQUEST

Nº 20777

Initiating Division: Date of Initiation:

ITEM	QUANTITY	UNIT	ESTIMATED UNIT PRICE	DESCRIPTION OF SUPPLIES OR SERVICE TO BE PURCHASED	UNIT PRICE	ACTUAL TOTAL PRICE
1	2775	ea.	$2.50	4103-50479, Cup, Rendix		

TOTAL ESTIMATED COST	EXP ORD NO / PROJECT NO 110	ITEM NUMBER 10	PROP CLASS 048	TOTAL ACTUAL COST
$ 6,937.50				$

DELIVER TO:

DESIRED DELIVERY SCHEDULE — MAXIMUM ACCEPTABLE EXTENSION OF DESIRED DELIVERY SCHEDULE 3 MONTHS

JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
19	(Allowing 6 mo. lead										
19 7	from Nov. '46)			463	463	463	463	463	460		

F.O.B. POINT: Factory — POINT OF INSPECTION: Factory

REMARKS (Reference Subject by number — items below and list all exhibits and attachments: 1 Recommended Source, 2 Code Source, 3 Should Serial Number Be Assigned, 4 G.F.E., 5 Tools, patterns, etc. to be loaned by Govt., Authority, 7 General Remarks)

1. Rendix
2. No
3. No
4. No
5. No
6. Stock Replenishment
7. None

Note: Balance of form accomplished by Fiscal and Procurement Divisions.

INITIATION: Upon due inquiry made it was found that the articles enumerated hereon could not be procured from any other branch of the Government without transfer of funds, or the immediate need of these supplies or the remoteness of this Station from point of supply precludes their purchase from any other branch of the Government.

APPROVED BY	APPROVED BY
SYMBOL DATE	SYMBOL DATE

INITIATED BY Randel Smith

PHONE 30104 SYMBOL TSAIT

APPROVED BY	APPROVED BY
SYMBOL DATE	SYMBOL DATE

APPROVAL OF FUNDS: The supplies and services to be obtained by this instrument are authorized by, are for the purpose set forth in and are chargeable to allotment(s)

The available balance of which is sufficient to cover the cost in an amount not to exceed	$	Increase of funds to cover actual costs. Actual cost approved for:	$
BUDGET AND FISCAL OFFICER DATE		BUDGET AND FISCAL OFFICER DATE	

VENDOR'S NAME AND ADDRESS	NOT ON UNAPPROVED LIST (Initial and date)	CONTRACT NUMBER / PURCHASE ORDER NUMBER

Figure 8 — Army Air Forces purchase request

AMSTIC Form No. 10-76-1A
(5 Dec 44)

TERMINATION REQUEST

PURCHASE REQUEST No.	DATE
2076	16 Nov., 1946
PROPERTY CLASS	OFFICE SYMBOL
03B	TSAAS
INITIATOR	TELEPHONE
WB G	30104

TO: Chief, Procurement Division
Air Technical Service Command
Attn: TSBPR6H-Control Desk

1. It is requested that action be taken to terminate the following articles:

A	B	C			D	E	F	G
STOCK NO.	PART NO.	CONTRACT IDENT. NO.			NOMENCLATURE	Quantity To Be Terminated	UNIT OF PURCHASE	APPROXIMATE DOLLAR VALUE
		Supp.	Exch.	Item				
4103-80479	-	2	1	1	Cup, Bendix	2600	Ea	$6,250
							TOTAL	

2. This termination or schedule change is requested because of: Reduced requirements since last procurement

3. Listed hereunder are names of contractors, if known, and the contracts and/or purchase orders and identifying call number, if any, and the purchase request number on which it is known that procurement of the above items is being made, based upon analysis of the Procurement Status Report or other available records where the Procurement Status Report is not available:
Bendix

4. Where two or more contracts and/or purchase orders are indicated in paragraph 3:
a. The Initiating Activity is attaching Termination Exhibits for each contract and/or purchase order.
b. Termination may be effected against any of the above AAF contracts that may be designated by the Procurement Division. Any exceptions to the above are listed below with the reasons therefor.
None

5. Termination costs are chargeable to beneficiary government and should be reported on determination to United Nations Branch. YES X NO

6. REMARKS: None

Signature Joe Reed, Cal A.C.

WP. Form 8-10-11-44-6M

Figure 9 — Army Air Forces termination request.

AAF STOCK CONTROL STATISTICAL SUMMARY
(SAMPLE)

ITEM SUMMARY

NUMBER ITEMS	STOCK MOVEMENT				EXCESS ACTION				ON ORDER	NEW PROC ITEMS	ZERO BALANCE ITEMS
	SLOW	%	ACTIVE	%	EXCESS		NO EXCESS				

ANALYSIS OF STOCK

		NUMBER	%	VALUE	%
1	AUTHORIZED STOCK VALUE				
2	VALUE OF INVENTORY				
3	ITEMS WITHIN 25% OF AUTHORIZED STOCK				
4	ITEMS 25% OR MORE BELOW AUTHORIZED STOCK				
5	ITEMS 25% OR MORE ABOVE AUTHORIZED STOCK				
6	ITEMS LESS THAN 6 MONTHS ON HAND				
7	ITEMS 6 TO 12 MONTHS ON HAND				
8	ITEMS OF OVER 12 MONTHS STOCK ON HAND				

ANALYSIS OF PROCUREMENT

		NUMBER	%	VALUE	%
1	TOTAL ON ORDER				
2	NEW PROCUREMENT				
3	ITEMS BELOW 6 MONTHS ON HAND AND ON ORDER				
4	ITEMS 6 12 MONTHS ON HAND AND ON ORDER				
5	ITEMS OVER 12 MONTHS ON HAND AND ON ORDER				

VALUE SUMMARY

1	VALUE OF PROCUREMENT IN EXCESS OF MAXIMUM LEVEL	
2	VALUE OF EXCESS QUANTITIES	
3	VALUE OF TOTAL REQUIREMENTS	
4	VALUE OF REQUIREMENTS — INTERIM AIR FORCE	
5	VALUE OF REQUIREMENTS — PEACETIME	
6	VALUE OF REQUIREMENTS — MOBILIZATION	

Figure 10 — Army Air Forces stock control management summary

tain a current stock control, each item of stock is computed at least once every three months.

Initiation of Procurement

Having determined that a quantity (1125 in the example cited) of a given item must be procured in order to fulfill the total issue and stock level requirements for a twelve month period, appropriate procurement initiation action is accomplished on the form indicated in Figure 8. If less than a twelve month and more than a nine month requirement is on hand or on order as of a given calculation date, no procurement action is taken until the succeeding review three months later.

Inasmuch as the actual negotiation of the procurement is involved with various legal considerations, this function is handled entirely by a duly appointed contracting officer. The information obtained on the Purchase Request constitutes a demand that he secure the specific item and delivery schedule requested. The type of contract which he will utilize, of course, depends upon the amount involved, type of item, nature of the procurement, and the prevailing legal restrictions. If we assume, however, that in Figure 7 the amount of outstanding procurement is 7800 instead of 1125, a

(*Continued on page 270*)

Comprehensive testing of coated fabrics requires a variety of specialized equipment.

BUYING COATED FABRICS

Suitability of the finished product is the prime consideration; wide variety of properties available to buyers who use adequate specifications and tests

● ***By E. L. Cady***

FABRICS which have had protecting or strengthening materials applied to them are generally known as "coated fabrics". The term is used when the coating material is merely coated on so it adheres strongly to the fabric surface, when it is "frictioned" on so it also penetrates through the interstices of the fabric, and when it is impregnated so that it furthermore penetrates or impregnates the fibers of the threads. Thus a coated fabric can be anything from one which bears a heavy or a light coating on its surface to one throughout which the coating is so transparent and thin that its presence is undetected by the naked eye.

Coated fabrics have been used for decades in such familiar items as rain coats, shower curtains and seat coverings. They have thousands of other uses in conveyor belts, in diaphragms for everything from industrial pumps to talking dolls, in ladies' hand bags, in work gloves, aprons and other industrial armor, and in as many other fields as anyone cares to take the space to name. They serve in the "rubber boots" worn by the farmer and the fisherman, the percussion pads which cushion the shocks of lithograph printing plates, the drapes at the parlor windows, and countless other products.

New coating materials and new types of fabrics which may be coated in various ways have arrived on the market in large numbers during the past few years. And as they have arrived, the business of making and applying the coating materials has become complex.

Increasing Complications

The basically simple operation of running newly coated fabrics over steam coils and other drying devices to evaporate the solvents and control the plasticizers is an example of this new complexity.

In the plant of the Hodgman Rubber Company of Framingham, Mass., in the prewar days almost all coatings were mixtures of natural rubber compounds applied to various grades of cotton fabrics. The drying machines then needed only simple three-speed step cone pulleys to provide all of the speed changes needed for varying the speed of travel of various fabrics over the coils and so varying the amounts of drying time. But now these machines are driven by D.C. motors controlled by rheostats to provide minute gradients of speed adjustment, and the exactness of control of evaporation rate is increased by carefully directing the warm air streams from electric fans equipped with steam coils.

It is obvious that some fabrics will take the coating materials more readily than others and that the drying process and all other processes will have to be varied accordingly. In the simpler prewar days the great majority of coated fabrics were cottons. Now the fabrics include ny-

lons, rayons and other synthetics as well as a far wider range of the "natural" fibers, and are in much wider varieties of weights and weaves.

It is equally obvious that the type of coating material, whether one of the new plastic compounds or a synthetic rubber such as Neoprene or one of the natural rubber compounds, will influence this drying speed. And of course the matter of whether the coating has merely been coated on or has been frictioned or impregnated can make a great difference.

Controlling Desired Properties

Beyond these obvious factors are the matters of control of properties and persistence of properties, both of which modern coated fabrics can have in high degrees.

If, for example, a fabric is so coated as to be water repellant unless dry cleaned, but the normal course of housekeeping would lead to that fabric being sent to the dry cleaners, then the fabric has water repellance to a controlled degree but lacks persistence of that property under normal usage.

As a more severe example, if a conveyor belt is to have a tacky surface so controlled that light paper items laid on it will neither fly off nor become stuck to it, then that property of tackiness can persist only so long as the belt surface does not become dry, glazed, hard, or perhaps softened and unduly adhesive. Tackiness itself is a mixture of coefficient of friction and of adhesiveness. To maintain the very slight adhesiveness which takes part in this tackiness the coating must continually supply to its own surface the exact and minute amounts of adhesive materials which are either removed by service or are evaporated, and must keep on doing so through a long and satisfactory service life.

A similar slow but continuous supplying of mildly adhesive material or of mildly solvent material to a coating surface could cause a ladies' handbag to adhere to any varnished surface on which it was permitted to rest for an hour or so, or could cause a seat covering to have a high affinity for dust which would adhere to or "crock off" on the garments of anyone who sat on it. Moreover, such undesired properties could persist for years in a coated fabric which was not correctly selected for its service.

The selection of fabrics for given purposes may be decided by their abilities to acquire and maintain the desired properties which will be imparted by the coating materials. Properties easy to obtain with duck could be nearly impossible with some of the rayons.

Fabrics and Methods

The selection of the method for applying the coating material—whether coating, frictioning, or impregnating—may be very little dependent upon the strength of the bond to be established between the coating and the fabric and almost altogether dependent upon the control and the persistence of the properties which the finished material is to have.

The coating material may have so much greater physical strength than the fabric and be so much stronger in other properties that the fabric becomes a mere vehicle. The coating material, then, may in its uncured state be so viscous and adhesive that only with the greatest difficulty could it be extruded or flattened into thin sheets and be heat cured into its final solid state, but by impregnating this material into a fabric and running the fabric through the curing processes the handling of the coating material may be easy. In such cases the fabric in the finished product may add desirable weight and stiffness and resiliency, etc., but be contributing nothing whatever to strength.

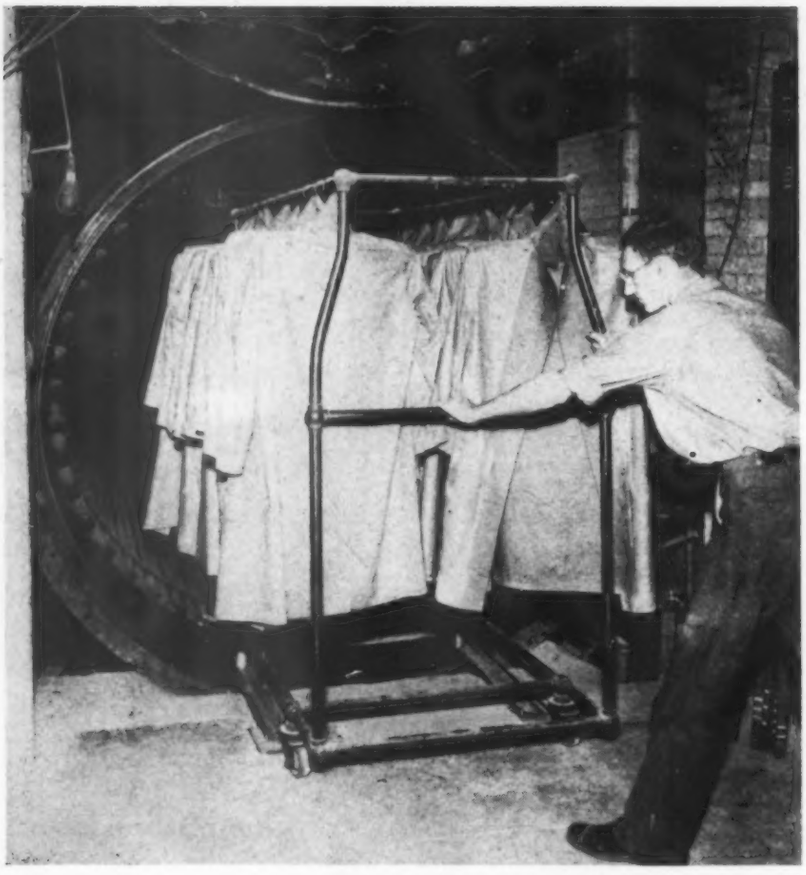
With all of these chemical and mechanical resources available to the houses which compound and apply the coating materials the buyer of coated fabrics often finds the best procedure to be: *Specify the results wanted (the properties desired) in the finished materials and let the coated fabrics manufacturer work out and recommend the materials which will give them.*

Three Ways of Purchasing

Coated fabrics can be bought, generally, in three ways. First, the completely fabricated item can be bought, as one would buy a rain coat or a conveyor belt. Second, the coated fabric can be bought, with the fabricating into finished products to be done in the buyer's plant or in a contract shop. Third, the fabric can be bought and shipped to the coating house to be coated on contract and perhaps also to be fabricated into finished items at that plant.

The advantages of buying com-

Setting up a scrub tester. The weights on the levers are moved to control the pressure.



Some products made of coated materials require a final curing operation after fabricating.

pletely fabricated items include all of the usual ones. In addition, many coated fabrics are difficult to join into assemblies. Some coated fabrics in their completely finished states are readily sewed, electronically stitched, or heat sealed. Others which have highly desirable properties are difficult to assemble by any of these methods except in their semi-cured or uncured states, and the products made of them must have final curing operations after assembly. The buyer therefore cannot buy these last products as other than completely fabricated items unless he is prepared to go to considerable trouble in cutting them up, joining or assembling the pieces, and performing final curing operations.

Coated fabrics which are to be cut up and joined in the buyer's shop can be bought in standard brands having known and guaranteed properties, or with special coatings for purposes which the standard ones will not meet. Different makers specialize on different coatings, and some research may be needed to find the house which has the desired ones.

Supplying of textiles to be coated on contract is largely done by textile mills and others which can obtain the fabrics to better advantage than the coating mill. Some of these textile mills have coating departments of their own but subcontract the work when they need coatings on which their own departments do not specialize. And in the present days of shortages buyers sometimes hit upon odd lots of yard goods which they can send to the coating mills to be coated on contract.

Purchase specifications for coated fabrics can be on the simple basis of suitability for use in a given end product, or of suitability plus specific factors, or of test specifications.

The great majority of present specifications are for brand names of coated fabrics of known properties and suitability for given purposes, or for special coatings which are to be suitable for their purposes. Such a specification in its simplest form would merely read "for use in ladies' rain capes."

Specification Factors

The simple suitability specification may not be adequate. In fact, for coated fabrics to be used for many purposes it is being discouraged as depending too much upon what the coatings mill means by "suitability". Therefore specifications are being amplified by such factors as:

Appearance, including color, texture, weight, pattern, etc.

Cleanability. Some coated fabrics may be dry cleaned, others may not. Some have such surfaces that if ink is spilled on them it may be wiped off without leaving any stain. Some have little affinity for ordinary household or office dusts and soils and may be wiped clean. Some are especially resistant to mildew.

Chemical Resistance. This should be specified for industrial work gloves and aprons and other armor, and for many other items which can

Assembly methods must vary according to the properties of the fabric and the coating.

be made from coated fabrics, with reference to the particular chemical action to which they will be exposed.

Fastenability. The material must be suitable for the method to be used in assembling items to be made of it. Most common methods are sewing, cementing, heat sealing, and electronic stitching.

Fire Resistance. Coated fabrics of common types are not fire resistant in the sense that asbestos is. Some types will char or melt in a flame but will not support combustion. The National Board of Fire Underwriters has specifications for testing these. An important point is that the fire resistance shall be persistent, that it shall not disappear by evaporation of compounds from the fabric nor as a result of normal cleaning or laundering.

Abrasion Resistance. When this is especially important it should be specified by test specification as described in a subsequent part of this article.

Resistance to Heat, Cold, Water, Weather. These properties should be specified in terms of degrees of temperature and hours of exposure, usually amplified by test specifications.

Physical Properties

Tensile and Transverse Strengths. In ordinary fabric the tensile strength and the transverse strength are different. The tensile is measured parallel to (in the direction of) the warp threads, which are much stronger than the transverse or filler threads. The transverse strength usually is called "tear resistance". The tensile may be twice as great as the tear resistance.

In many coated fabrics, by contrast, the coating material is so much stronger than the fabric that the tensile strength becomes that of the coating and not of the fabric, and is greatly increased by the coating process. And since the strength of the coating is the same in all directions, the tear resistance is as great as the tensile.

Other Physicals. Other physical properties which may be specified are hardness, resilience and flexibility. Most single-ply coated fabrics can be bent double without damage, but if multiple or laminated plies are to be used it may be wise to specify the smallest radius over which the material may be bent without damage.

Special Properties. Tackiness, adhesiveness, coefficient of friction and other special properties may be specified. In many cases they are difficult to define in terms other than those of suitabilities for purposes.

Useful Tests

Test specifications should be directly related to the end uses of coated fabrics. The tests should be made by instruments or by other controlled procedures. The relation of any such test to the suitability of a coated fabric for a given use is likely to be known only by experience. Coating mills are rich in such experience and their sales engineers are highly cooperative in working out the tests necessary for useful specifications.

Oxygen Bomb Test. This tests the effects of oxygen in the air in aging the material or in causing chemical changes which reduce the persistence of its controlled properties. The material is placed in a closed chamber and is subjected to pure oxygen at fixed pressure and temperature for a definite time. The pressure usually is 300 pounds per square inch, the temperature 158 degrees F. plus or minus 2, the time 8 days.

Scott Tests. These tests measure the tensile strength and the tear resistance, also the adhesion of the coating to the fabric. The machine is a standard pendulum type and gives readings in pounds or in pounds per square inch.

Weatherometer Test. This is a test for persistence of properties of coated fabrics which are to be exposed to the weather and to sun light. Samples of the material are placed in a closed chamber and are exposed to strong light and to moisture for a specified time, usually 96 hours. Samples must not harden nor show other signs of damage after test.

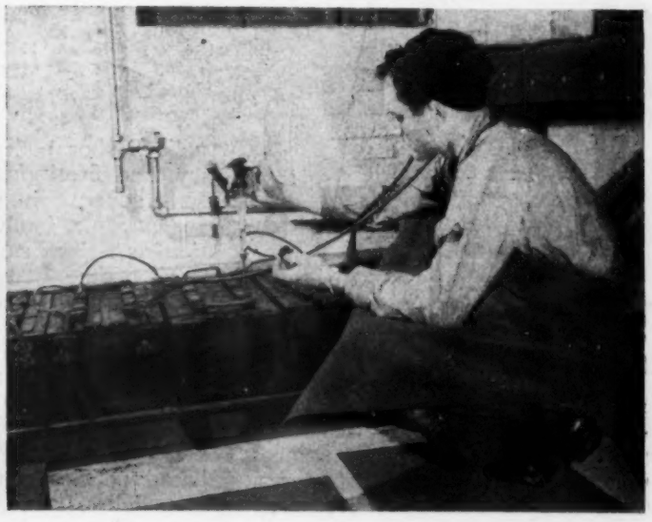
Temperature Resistance Tests. After being kept in chambers of either high or low controlled temperatures for specified time periods so that any weakening effects of temperature will be obtained, the samples are subjected to appropriate oxygen bomb, Scott, Weatherometer, abrasion or other standard tests. The temperatures and the air conditions within the chambers may be controlled in accordance with the conditions which the finished fabrics will meet in service.

Hydrostatic Test. This is a test for resistance to water and to wet conditions, principally to rain. As used in the laboratory of the Hodgman Rubber Company, water is forced under specified pressures up

Continued on page 228

Coated fabrics can be die cut and handled by other standard fabricating processes.

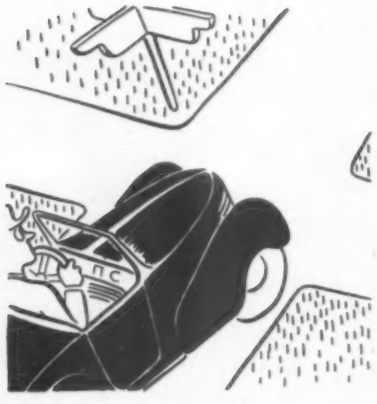
Besides acid resistance, this apron must be big enough and stiff enough to protect the worker.



BUSINESS POLICY

By Alfred Bornemann ●

An analysis of the factors affecting economic trends and management decisions directing the course of business operations in adjusting to immediate and probable long range conditions



I. POLICY IMPLIES A CHOICE

WITH the return to peacetime conditions, business men have to readjust their activities to an environment in which government will play a far less dominant role. Those producing on government contracts during the war will no longer depend on priorities for raw materials and labor. Others, not then doing war work, will to a large extent also have to restore sources of supply and get satisfactory labor. All will have to build up markets, for those selling to the government had an assured market, while others, if they were able to produce at all, could usually sell whatever was available for sale in the seller's market. Cost controls will likewise become more important.

All this suggests a consideration of business policy under the conditions to be expected for at least several years. Business policy is of course closely related to business management, and yet on closer analysis a distinction might often be useful. Management, for example, may imply the application of more or less accepted principles in operating a firm. But business policy suggests the importance of a choice of alternatives in connection with important matters.

Thus, problems concerning centralization or decentralization of production call for decisions of policy. After the decisions have been made, however, and a plant is ready for production, the operation of it may be considered a strictly management function. Similarly, decisions with respect to inventory policy, for example, may be distinguished from the management involved in acquiring and utilizing the amount of inventory which the policy decision requires. While the objective involved in both policy and management is obviously the same, namely, to make profits for a firm, the considerations entering into the formation of policy appear to go somewhat beyond what is ordinarily implied by the term management.

Problems of business policy may be approached from various angles. In general, however, it is possible to distinguish two important factors. On the one hand, government policy on a number of matters must be appraised in making decisions. On the other hand, the firm's own long run methods and procedures in attempting to make profits require attention.

II. EFFECT OF GOVERNMENT POLICY

GOVERNMENT policy relating to business is manifold nowadays, even in what we would call normal times, and discounting the policies prompted by national emergency. Among other features, we may note anti-trust policy, tariff policy, labor policy, monetary policy, and fiscal policy. Of course, some government activities, such as, for example, food and drug inspection, as well as some aspects of the work of the Federal Trade Commission, are of a somewhat routine nature and, in any event, affect different industries in unique ways. Moreover, these activities are so numerous as to defy effective summary in relation to business policy.

On the other hand, however, the broad policies concerning business monopolies, tariffs, labor, and monetary and fiscal matters concern practically all business policy makers. So far as anti-trust action is concerned, for instance, we find variations in the vigor with which the policy is implemented. In more recent years there has been a marked increase in this activity. The likelihood of the continuance of this activity is largely dependent on Congressional appropriations to the Department of Justice for this purpose. Of course, variations in these appropriations are to some extent dependent on variations in popular

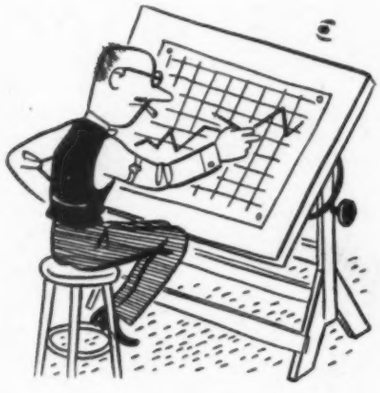
sentiment, which in turn is influenced in part by what business firms tend to do.

The details of a given tariff act may affect particular firms directly, but the overall tariff policy affects all business. Implementation of the current American drive for an extension of international trade would require lower tariffs as a general policy. But it is too early as yet to be certain of the extent to which this will materialize. A great many have been impressed with the desirability of greater internationalism, but it is doubtful whether many understand what this entails.

Government labor policy has probably not yet crystallized into a permanent pattern, although it is obvious that, after assisting in the creation of mass trade unions whose economic power is limited, government has invited the utilization by these unions of political power. The relationship between government labor policy and business policy is illustrated by the official sanctioning of a wage policy having a clear relationship to business cost and price policy, including, for example, that in the automobile industry which had already encountered difficulties in reverting to its pre-war aim of effecting gradual reductions in prices of new models.* Recent government wage policy was, of course, formulated under war powers and its continuance is in doubt.

Nevertheless, the mass trade unions unable to wield economic power, may be expected to attempt to continue to use political power. The importance and effectiveness of such efforts will come to light particularly in the next period of depressed business conditions. Even though a relatively minor readjustment might otherwise be experienced, the fixed wage structure may conceivably cause considerable difficulty for business, possibly intensified by resort to government aid on the part of the unions.

Fluctuations in business activity are also related to monetary and fiscal policy, which will in any event require the increasing attention of business policy makers. Credit policies of the Federal Reserve system are related to the likelihood of expansion or contraction in business activity. The nature of these credit policies is also to some extent related to government debt policies. Tax policy is partly related to government debt policy, but it may also have a significant relationship to business incentives and prospects.



III. PROBLEMS OF ADJUSTMENT

BUSINESS policy on matters not so directly influenced by government policy involves many considerations, only a few of which can be mentioned in this survey. Decentralization of plants and production may be evaluated from various points of view. Nearness to raw materials, labor supply, and markets are commonly mentioned as reasons for a policy of decentralization, although to these might be added the inevitable advertising of a firm's products if it locates plants in various communities. Instances of satisfaction with the results of decentralized purchasing, where plants are decentralized, suggest review of overall purchasing policy by other similarly decentralized firms.

Inventory policy will vary with price and demand expectations, as well as with estimates of general fluctuations in business activities. Retail inventory policy involves, in the shorter run, the problem of eliminating lower quality war time goods and replacing them with the better quality goods already in process of production. Moreover, decisions have to be made about the planned turnover of inventories.

The immediate post-war production of goods for sale to others for restocking inventories provides an illustration of what is known as the acceleration principle. This process goes a considerable way toward explaining continued high levels of employment and output. At the same time, however, it is evident that this restocking will sooner or later be completed, and this at once raises questions of policy. Restocking of inventories is, of course, not the only factor accounting for high production levels. To it must be added some production for foreign consumption, considerable credits for which are being made available by government policy. To what extent this will continue to be significant is not particularly measurable at this time.

Meanwhile, quality and inspection requirements are increasing. These are clearly related to costs, which are also affected by raw material costs as well as wage costs. The productivity of labor is a contributing factor of some importance. It appears fairly evident that labor productivity has been declining, but the explanation is not easy. Apparently the decline is partly related to habits developed in the period of labor hoarding during the war, when costs could easily be passed on. Also, during all periods of high level production many inefficient workers are utilized for purposes beyond their capacity.

However, in addition there are some matters at the plant level about which not very much has been disclosed. These concern the exact limits of management authority as compared with that of the labor union representative. There have been many reports on collective bargaining, but concrete studies of the precise scope of management authority at the production level are for the most part lacking. Until these are forthcoming and publicized, the formation of labor policy will continue to be difficult.

On the other hand, high labor costs will in some instances suggest better equipment and layout. In still other instances, they will stimulate efforts toward technological improvements.

Related to costs is price policy. Long run as well as short run matters require consideration in this connection. The anticipation of gradual improvements in productive efficiency may suggest a policy involving reductions in prices over

(*Continued on page 270*)

THE CONTAINER SITUATION

• ***Reported by George E. Henry***

Purchasing forum reviews new product developments and market conditions in shipping container field

FOUR speakers representing four divisions of the container industry reviewed new developments in the fields of fibre and metal drums, burlap bags, and heat sealed closures, at a recent forum meeting of the Purchasing Agents Association of New York, presided over by Edgar A. Rumple, Purchasing Agent of Merck & Co., Rahway, N. J. The discussion covered both the physical characteristics of these container types and current market conditions. Comments on the supply situation in all fields indicated that current shortages will not be overcome until raw material shortages have eased.

Since this meeting, the New Textile Bag Mfrs. and the Burlap Importing and Bag Mfrs. Industry Advisory committees at recent CPA meeting, urged revocation of Order M-221—manufacture, delivery and use of textile bags, and M-47—sale and use of burlap imported from India, which are referred to in the action of this report dealing with Burlap Bags. They also recommended elimination of bag set-asides from the cotton fabric distribution table in Order M-317A, though they did not want to surrender the percentage of the mills' production guaranteed them under the M-317A set-aside.

The committee said that the industry would be able to get enough material for bags if the orders were revoked. It was predicted that the present heavy demand for bags would continue at least through the first quarter of next year.

Following is an abstract of the discussion matter presented by the four speakers at the New York Forum meeting:

FIBRE DRUMS

ACCORDING to Harold A. Bergstrom, chief chemist, The Container Company, Van West, Ohio, the Interstate Commerce Commission has recognized the fibre drum as a standard shipping container under Specification 21-A, in which shipments are limited to 200 pounds. There are, however, a number of items for which packing weights up to 400 pounds are permitted. Above 200 pounds the drum must be stronger than the I.C.C. standard. It is significant that within the past year the I.C.C. approved a fibre drum under Specification 23-G for shipment of 50 pounds of dynamite. Needless to say, this drum must pass very rigid tests.

Mr. Bergstrom stated that the fibre drum industry is peculiar in that there is no standard equipment on the market for the manufacture of drums. Most other types of containers are made with standardized machinery. Equipment for the making of drums, however, is especially designed and held a secret by the owner; in fact, one of the tricks of the industry is the "know how" of fabrication.

In the past five or six years the industry has grown ten-fold. Millions of containers were used in war service for shipment of foods, supplies and war material. One of their outstanding uses was in the shipment of incendiary bombs. Drums were developed that met all service requirements for protection of contents against heat, high humidities and vermin in the tropical climates.

Commenting upon the feeling in some quarters that the fibre drum is a cheap container, Mr. Bergstrom emphasized that such is not the case. It is an economical container for the service for which it is adapted," he said, "and it will compare favorably with any type of competitive package from the standpoints of service and protection. However, it is not manufactured on the supposition that it is a cheap container. Many of the special containers are more expensive than the metal drum, and they are sold entirely on performance."

Resin liners and other types of liners are readily incorporated in the fibre drum, materially increasing the service factor of the drum for handling a wide assortment of materials. Mr. Bergstrom also said that drums readily lend themselves to the making of attractive packages.

Concluding his talk, he said that the outlook for the next year is not any too promising, and that it hinges almost entirely on availability of paper board and steel. In response to an inquiry as to whether fiber drums could be recommended as containers for heavy liquids, he said: "The answer is 'Yes and No'. It depends upon what the heavy liquid is. Drums have been used for greases, printing inks, mastics, and materials of similar substance. Right now the use is limited to very viscous materials."

STEEL BARRELS

ROBERT CAMPBELL of Bayonne, N. J., vice president of the Rheem Manufacturing Co., stated the first steel barrel developed in the United States was made about 1900 by Cowles and Danziger, Detroit, Mich. The barrel was bilge shaped, side seam being riveted, and the heads attached to the cylinder by riveting. In 1902, the Bayonne Steel Barrel was developed by the Standard Oil Co., of New Jersey. In 1906, equipment was developed to galvanize the completed barrel by the hot dip process, the spelter entering the barrel through the ¾" and 2" openings in the head, developing the only known closed container that is galvanized inside and out without additional vents to release the gases generated in the operation.

While the first cost of the Bayonne steel barrel and similar containers is high, they are returnable and remain the property of the shipper. In the long run, they are economical and remain in service many years. Many have been in service from twenty to thirty years.

The present straight side steel drum was developed in 1907 by the Draper Manufacturing Co. of Cleveland, Ohio, to meet demands of the petroleum industry for a lighter and cheaper container to replace the heavy bilge shaped barrel and more costly wooden barrel.

"The advantage of the steel drum is that more volume can be shipped in a straight side drum in a given space than in a bilge shaped steel or wood barrel," he said.

C. T. Draper is considered the "father of the steel drum industry", said Mr. Campbell. He developed the present baked-on enamel job, and was the first to use the electric resistance or flash welding machine to weld the ends of an 18 gauge black sheet 36" wide to form the cylinder, a method used throughout the industry today.

Along with the development of the 18 gauge straight side steel drum came the 16, 14 and 12 gauge straight side drums with reinforced chimes, pressed out of I-bar rolling hoops, all made in accordance with specifications by the I. C. C. for the shipment of flammable and hazardous products.* Later came the development of drums made of 22 gauge material and lighter, with electric lap welded or mechanically formed side seams for the shipment of resins, semi-solids, and tar products that solidify after cooling.

Later came the development of the full removable head for one-time shipping drums. The lever type drum is used extensively for the shipment of shortening, paints and many other semi-solids. With the use of the lever type closure came the development of interior lacquered or coated drums to protect the contents. This development has just about started and will provide wider uses for steel drums.

At the beginning of World War II it was found that the best drum for the shipment of oil and gasoline was one made of 16 gauge black steel sheet throughout, with pressed out rolling hoops and reinforced chimes made in accordance with I. C. C. Specification 5-B. This type of drum was supplied by the millions to the armed forces.

Mr. Campbell stated that in 1922 the total annual production of steel drums of all types was 2,400,000. In 1944, during the peak of demand for military uses, the steel drum inindustry produced 2,500,000 drums per month of the 55 gallon capacity, 18 gauge and heavier, besides many other drums of smaller capacity and lighter gauges. Today 85% of the productive capacity is owned or controlled by the major steel companies.

BURLAP BAGS

DONALD S. FREY, secretary of the Textile Bag Manufacturers Assn., Chicago, discussed burlap bags. Burlap cloth, he explained, comes from jute fibers from a reed-like plant which grows best in the Bengal Province of India. Reviewing the difficulties of dealing with the shrewd East Indians or Scots who may be the owners or managers of processing plants, plus OPA regulation, he said that "guessing the trends of markets or prices against such a background would have to be considered as merely a pastime." The situation is further complicated by the fact that the food situation in India demanded that land be diverted from jute production and set aside for growing rice; also, once the jute is purchased by the 80-odd Calcutta mills, a steady supply of burlap is by no means assured, as Oriental customs and religious practices create perplexing conditions.

Though jute is woven into cloth, webbing, cordage, and other products in Scotland, Continental Europe, and the United States, Calcutta remains the largest producer. More jute is retained for manufacture there than is shipped in the raw state to all other countries combined. Mills in Scotland and the United States are devoted mainly to specialties in cloth, webbing, and cordage.

The burlap bag manufacturer must calculate his Calcutta shipments as being between 45 and 60 days away from actual availability, he continued. "Although our industry usually purchases its requirements for Calcutta shipment six months in advance, currently our total contracts for shipment within the next six months cover less than one third of our expected requirements. Furthermore, while the in-

dustry's peacetime inventory is normally 120 days' requirements, or about 340 million yards, currently our inventory is below 30 days' requirements. Therefore I think you will understand why your burlap bag supplier cannot for the present give you the usual long term contract."

Mr. Frey stated that the average weight of a yard of burlap is 8½ ounces. The various burlap constructions are described in terms of ounces per yard of goods in a 40" width. The 40" 7½-oz. cloth is a common so-called "lightweight"; it represents 28% of all burlap cut up for bags in 1945. The 40" 10-oz. cloth is a common so-called "heavyweight", and represents 22% of the 1945 burlap bag cut-up.

He stated that the toughness, flexibility and strength of burlap lends the material to any sort of handling. Various weights and weaves are available for many packaging problems: loose weaves for products that need aeration; tight weaves for fine-grain products. Burlap combines readily with other materials by use of asphalt latex or vegetable glues as combining agents. In this form, bags and containers can be made that are moisture-proof and waterproof. Sewed on the bias, in different widths, burlap makes a tubing that can be used as a cover for products that run to large or small uneven shapes. Two small wire ties complete a tubing wrapped-package, regardless of its shape.

Speaking of current conditions, he said that balancing present inventory and expected receipts for the balance of the year against expected consumption for the same period, indicates a shortage of a million yards.

India has been falling behind on its commitment to ship 126,000 tons (4,000 yds. per ton) to the United States during the last half of this year. Argentina has persuaded India to ship large quantities of burlap to that country in return for corn, wheat and other products, and in order to meet Argentina's demands, India has requisitioned all of the 40" 10 oz. due on U. S. purchase contracts. In addition, the subject is involved by India price ceilings.

"An unknown quality of burlap and burlap bags is in the hands of the War Assets Administration," he continued. "This burlap is gradually being sold at the various regional offices to many dubious interests and to a few legitimate burlap bag manufacturers."

Concluding his talk, he said that the cotton bag is in general a satisfactory substitute for the burlap bag. He expressed confidence, however, that the bag industry will shortly be able to meet its customers' needs. The manufacturing capacity of the industry is adequate to meet present and potential demands.

HEAT-SEALING BAGS

"THE paper bag now takes its place in the packaging field along with glass jars, tin cans, and other types of containers as a basic material for modern packaging," declared Fred S. Hinkle of the Benj. C. Betner Co., Devon, Pa. One of the newest developments contributing to this status he described as the Heat-Seal Closure, first developed for the frozen food industry. After many experiments, a sheet of parchment paper, coated over its entire surface with a heat-sealing and moisture-vapor-proof coating, was selected. The package had a heat-sealed bottom, and was closed at the mouth by the use of heated metal bars. Later, other films such as cellophane, pliofilm, and similar coated films were introduced.

Heat-sealing bags are now available in a variety of papers, foils and films. Material selection depends entirely on the requirements of the product to be packaged. Kraft papers are used for strength, with a double thickness where added strength is required. Kraft papers can be used in conjunction with other papers that give the necessary protection required for any given product.

Papers such as glassine, parchment, and combinations of these, laminated, are used extensively in the specialty bag field. A single sheet of glassine, for example, is used in coffee bags as a liner for protection against grease penetration. Parchment is used in packaging fresh vegetables that require wet strength; and for shortening, lard, and other greasy products where grease-proofness is a major need. Where moisture vapor protection is required, two sheets of glassine are laminated to meet this function. Where extremely hygroscopic products are packaged, three sheets

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The Container Forum: Hinkle, Campbell, Rumple, Frey, Bergstrom

History repeats itself only because people refuse to profit by experience and insist on repeating old mistakes

Prosperity comes by applying economic laws, not by trying to change them

By Grey Leslie

ECONOMICS – "THAT DISMAL SCIENCE"

NATIONAL politics that affect all phases of industry and the nation's economic life are being framed constantly by economists employed in government. Congress bases much of its long-range legislation on principles and data furnished by them. Whether or not we agree with Carlyle's petulant definition of economics as "that dismal science", business executives — and purchasing agents especially — are finding it increasingly necessary to have at least a working knowledge of the subject; to have positive opinions about it and to make their opinions known and effective.

For the past decade there have been troops of sophisticates in high places parading as "economists"; they have toyed with our national economy at all levels. Out of this rich experience they have widened the field of their experimentation to global proportions. The result is, that many government departments charged with the responsibilities of formulating policies affecting industry and our entire economic life, are filled with arrogant "experimenters" and enthusiastic "economic planners." They believe, as most undergraduate minds do, that their brand of "modern economics" is the key to all wisdom. They have ridiculed and would have us discard a century of real economic knowledge and experience, and have given us a decade of flippancies and slogans.

History's Lessons Scrapped

It is a fact that the "classical" economists, who are so superciliously disdained by the "modernists", provided the basis of the American system of free enterprise. They helped build the nation to its present greatness. To suggest, as some of our "new" economists do so often, that Bentham, Adam Smith, Ricardo, Bastiat and the Mills were abstract scientists, whose world was peopled with a species of robot, labeled "the economic man", is not merely nonsense; it is a caluminous caricature of a group of men whose high sense of social responsibility has never been questioned by economic historians anywhere at any time. These men laid the foundations of the American ideology. The character of the early republic, to which they contributed so much, remains impressed upon American civilization. It gives substance to our claims of the benefits of our type of democracy.

The truth is, that the science of economics has been sadly vulgarized. It has been travestied by groups of exhibitionists who have found sponsorship under a fictitious aegis of liberalism. If we are to succeed in the war of ideologies, we must regain and refortify belief in the sound traditional values for which we have stood in the past. The world's greatest achievements have depended as much on fidelity to tradition, as upon their own originality. Totalitarianism grows out of a collapse of values, beliefs and institutions that are common to Western civilization. The force of Santayana's maxim, that those who cannot remember or who deliberately ignore the past are condemned to repeat it, gains added weight daily.

In an incisive little book with the beckoning title, "Economics in One Lesson"*, Henry Hazlitt has done some broad cutting through a forest of current economic fallacies. He has hewn a welcome path to clear thinking. The book will be challenged by vociferous exponents of huge government spending and the philosophy of political subsidies. It

**Economics in One Lesson*, by Henry Hazlitt. Harper & Brothers, New York, 222 pp.

will excite an angry clamor from the school of "new economics" opposed to individual savings and thrift. It will attract a verbal barrage from those who discount long-run economic policies for the illusive benefits of short-run expedients. Hazlitt warns us that, "Today is already the morrow which the bad economist yesterday urged us to ignore."

His precis can be reduced to a simple lesson in a single sentence. "The art of economists consists in looking not merely at the immediate, but at the longer effects of any act or policy; it consists in tracing the consequences of that policy not merely for one group but for all groups."

Spending Is the Popular Cure-All

He develops his "lesson" with logic and conviction. He does it without a shadow of pedantry; but one quickly senses a vast historical knowledge compacted in this little book.

Government spending is an age-old expedient. It has a dismal history that extends from Ptolemy to Hitler. Its ultimate is painfully consistent. Pericles climbed to dictatorship in Athens on a policy of public works, and the democracy of Athens was ruined by it. Augustus did it in Rome, and Diocletian experimented with Roman law by fixing prices, wages, and the places, conditions and types of human work; in spite of Gibbons' theories, Rome finally fell largely because of these policies of government spending. Florence voted away freedom for the authoritarian rule of the Medici. France had her Napoleon. England tinkered with "Speenhamland" laws. Germany and Italy added their sorry spectacles with a Hitler and a Mussolini.

The first principles of sound economics were always there, immutable but ignored. History repeats itself only when men do not know enough of it to prevent a repetition of its errors. Hazlitt brings us up to date:

"There is no more persistent and influential faith in the world today than the faith in government spending. Everywhere government spending is presented as a panacea for all our economic ills. Is private industry partially stagnant? We can fix it all by government spending. Is there unemployment? That is obviously due to 'insufficient private purchasing power'. The remedy is just as obvious. All that is necessary is for the government to spend enough to make up the 'deficiency'. An enormous literature is based on this fallacy, and, as so often happens with doctrines of this sort, it has become part of an intricate network of fallacies that mutually support each other."

Taxes and Business Death

Years ago we were warned against the temptation to sublimate the "State" or the "Government". Yet there is a rampant herd of economic curiosities who assume that the "State" is an entity possessed of unlimited resources to give away. They tell us that the government can spend without stint; that it can continue to pile up debt without ever paying it off because "we owe it to ourselves". The fact is that government or the State has nothing of its own to give anyone; it can only subsidize one group by taking a toll on the energy and productivity of another group by taxation. The State's sole source of revenue is taxation.

On the troublesome question of taxes, Hazlitt's chapter titled "Taxes Discourage Production" sparkles with sound reasoning and shatters another fallacy of the "new economics." When income is taxed fifty, seventy-five, and ninety per cent, it is natural that people will examine the necessity of working six, eight or ten months a year for the government. It means that they are permitted to retain remuneration for only six, four or two months' work for themselves and their dependents. If they face a total loss when they lose, and can keep only a small fraction when they win, they will decide that it is folly to risk capital in any venture.

Champions of the "new economy" have suggested legislation to tax savings and other bank deposits. Even insurance premiums and purchases of existing securities are included in their taxing system, with certain paternalistic exceptions under government control.

Production suffers in direct proportion to the extent of the discouragement of risking capital. If the scheme of the new school were to be adopted, it would tax away capital before it could be accumulated.

It is recognized that essential government functions require a certain amount of taxes. The indispensable government services supplied compensate for that drain of capital; but when taxes approach virtual confiscation, the government creates and aggravates the problems of non-production and unemployment.

Patiently retreading the road to first principles, Hazlitt condenses in chapter headings the targets of his telling attacks on current economic fallacies. On the subject of "Credit" he says, "All loans in the eyes of honest borrowers must eventually be repaid. *All credit is debt.* Proposals for an increased volume of credit, therefore, are merely another name for proposals for an increasd burden of debt. They would seem considerably less inviting if they were habitually referred to by the second name instead of by the first. . . . There is a strange idea abroad, held by all monetary cranks, that credit is something a banker *gives* to a man. Credit, on the contrary, is something a man already *has*. He has it, perhaps, because he already has marketable assets of a greater cash value than the loan for which he is asking. Or he has it because his character and past record have earned it. He brings it into the bank with him. That is why the banker makes him the loan. He feels assured of repayment. He is merely exchanging a more liquid form of asset for a less liquid form."

Bankers stay in the business of lending money only if they can survive rather exacting tests. If they make many mistakes they lose their own money, or the funds entrusted to them, and have no more. Thus private lenders are rigidly selected by a process of survival of the fittest. Government lenders have been known to lend money for some vague purpose like "creating employment"; and the more inefficient the work—that is, the greater the volume of employment it requires in relation to the value of the product—the more highly thought of the investment is likely to be.

Risking Other People's Money

On the subject of government subsidies, he says, "The proposal is frequently made that the government ought to assume the risks that are 'too great for private industry'. This means that bureaucrats should be permitted to take risks with the taxpayers' money that no one is willing to take with his own."

The copybooks we used in our early school days often taught more than penmanship. The maxims they contained taught the proverbial wisdom of saving and thrift, against the consequences of prodigality and waste. The classical economic doctrines of Adam Smith were not considered too advanced for adolescents to copy: "What is prudence in the conduct of every private family can scarce be folly in that of a great kingdom."

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Visiting salesmen are the eyes through which the purchasing agent broadens his observation of the business scene. The turning point from the long sellers' market may already have been passed. Both buyers and salesmen must revise their thinking in the light of this change

THE PURCHASING AGENT –

Specialist in Vendor Relations

● *By Arthur G. Pearson*
Director of Purchases, American Meat Institute, Chicago

THE relationship between purchasing and sales is probably more important than most business relationships, because the field for development and the creative possibilities within it have as yet hardly been touched. Actually, production problems have received a great deal of attention and, as evidenced by our war effort, have been in a great measure systematized and brought under effective and efficient control. Such can hardly be said of the distribution program in our society. This distribution problem has many aspects, but let us consider here the simple relationship between purchasing agent and salesman.

Specializing has been the constant keynote of business for the past 100 years. The salesmen are specialists in selling the products of industry; purchasing agents are specialists, not alone in buying, but in the proper concept, they are specialists in vendor relations. This definition of a purchasing agent's job, that of buying specialists in vendor relations is achieving wider acceptance. As such, the modern purchasing agent, accepting the challenge of this definition of his contribution to business organization, is seeking closer cooperation with the sales organizations that are serving him.

Following through on this definition of a purchasing agent as being a specialist in vendor relations, such a purchasing agent looks upon the salesmen that call on him as the eyes through which he can familiarize himself with materials and equipment that will enable his organization to efficiently produce the proper quality of mechandise.

We might consider at this point another definition. Often the question has been raised as to what quality of merchandise salesmen should attempt to sell. Actually, there is a simple definition which rather adequately answers this question. The quality of merchandise that a purchasing agent should buy, or that a salesman should sell or attempt to sell, is that quality which would result in the lowest unit cost over a period for which the material is needed. This may mean that the purchasing agent should buy the very finest or the most expensive merchandise available. On the other hand, it may mean that he should buy the quality that sells at the very lowest unit cost. Only the purchasing agent, working together with the salesman, can reach the proper conclusion as to what merchandise will come closest to fitting in with this definition. Actually, the definition of the proper quality to buy is the definition of an ideal situation which very seldom is realized. All the purchasing agent can do is to attempt to approach that balance of quality and cost factors.

How different this relationship is today from the conception that one Chicago purchasing agent, a number of years ago, had of his job. It is said that when a salesman called on this purchasing agent, he was ushered into a large office that was sparsely furnished. As the salesman entered, the purchasing agent indicated a lone chair at the other side of the room from the purchasing agent's desk. This did not bother the salesman until he sat in the chair and tried to draw it up to the purchasing agent's desk. Much to his dismay he found that the chair was nailed to the floor. When the salesman tried to move, the purchasing agent's comment was, "You are close enough. I can hear all that you have to say from where you are."

In contrast to this, let us consider Hank Brueggemann, who until his death three years ago was purchasing agent at Acme Steel Company. Hank made courtesy a definite pol-

Address before the Chicago Sales Club, October 3, 1946.

icy of his department. Salesmen coming out to visit with him were met at the station with the company car, and if they had to wait, they were offered coffee and rolls, or what have you, while they waited in the reception room. Hank was the type of man which we have all continually admired. Just the other day, the Purchasing Agent's Association of Chicago, offered to District 3 of the National Purchasing Agents Association, an award which is to be called the H. L. Brueggemann Award. This award each year will be made to the man in the middle west who has contributed the most to the advancement of purchasing, and, who by action, precept, and personal characteristics most closely emulates the unselfish devotion of Hank Brueggemann.

More and more the smart purchasing agent realizes that while he can get away from his desk a great deal to visit vendors and to visit departments of his own organization, he still is limited in his value to his company by what he himself has time to cover. If, on the other hand, he uses salesmen as his eyes, he has many men who consider it part of their work to watch out for his interests, to locate new sources of supply and offer him substitutions for materials that are difficult to get, or substitutions which will result in a better product at a lower cost. These services of a salesman to a purchasing agent are today of greater value than ever before. This is true because we are in a period of turmoil, of changing ideas, changing production, of new and sometimes better methods. On all these factors the purchasing agent must keep himself thoroughly informed.

It is the salesmen calling on him from day to day that enable the purchasing agent to keep his fingers on the pulse of the business world. When the salesmen stop calling, the purchasing agent loses his contacts, and to a certain extent becomes blind as to what is taking place in the cross currents of the business world. Sure, he gets reports and bulletins and all the other useful forms of data and information, but these, while they may supplement the calls that a salesman makes, cannot by any measure or means take the place of what a salesman, as the purchasing agent's eyes, can do for him.

Another illustration, which I hesitate to mention because it has been so widely quoted, but nevertheless it does illustrate the point, is the change that is taking place in the past few months in the purchasing organization of the Ford Motor Corporation. When General Al Browning was recently made vice president in charge of purchasing for the Ford Motor Company, he set out to make his purchasing department a more valuable tool of management. One of the first things he did was to ask for a list of the organizations, business societies and clubs to which members of his purchasing department belonged. He was very much surpised when he was informed that it had been contrary to the company policy for members of the purchasing department to be seen with salesmen. In fact, to be seen outside the office with a salesman was a good cause for being fired from the purchasing department at Ford Motors under the old regime. I understand when the buyers went to a ball game, the salesman had to be sure that some third person was sitting between them. This sounds laughable, but it is a situation which actually existed in a large purchasing department.

Incidentally, the purchasing department issued a blanket order covering the cost of membership fees to local purchasing agents associations for 55 of their members. This also was a distinct revision of a former policy, because for years it had been impossible for any local associations to induce Ford Motor Company personnel to join their associations. The Purchasing Department was asked to submit a list of clubs because they are expected to take salesmen out. This is an example of a change which, no doubt, many of you have noticed going on in other organizations. When purchasing people look upon their work as career work, the type of work that they want to spend their entire life doing, you will find them turning more and more to the salesman and developing contacts with salesmen, because they know that through these men they are going to be able to do a better job.

Through the war period, it was the salesman who kept the purchasing agent and his company supplied with materials, and now as we go into the turmoil of new products, new methods, new procedures, it is again going to be the salesman who will keep the purchasing agent informed as to what is going on. The smart purchasing agent, practicing what we in purchasing like to call good buymanship, encourages and cultivates these salesmen.

For a long time we have heard about the sellers' market. Most salesmen have probably spent more time turning down orders than accepting orders, and have racked their brains to allocate the short supplies of items between those companies they want very much to take care of and retain. Actually, the situation that we have had in the past few years has been the sales manager's dream come true — but only in the form of a very bad headache. That situation is probably further on its way to being changed than many of us realize. In fact the Business Survey Report of the Purchasing Agents Association of Chicago appears to indicate at the present time that the turn came sometime during the month of August. Often when a turn has been reached, it is hard to realize that a turning point has been passed until we are three or four months past this turning point. However, our Chicago Association, for the past year in its Business Survey Report, has been able to check very closely on the trend of business activity in our community.

We have found that these reports consistently give information that has been running one or two months ahead of the information available from other sources. This has been true to such an extent that both the Chicago Federal Bank and the National Reserve Bank insist on receiving a copy of our report as soon as it is ready.

A surprising thing to all of us was the information contained in the September report. Where our members had been continually extending the committments that we were making, up to that time, we now find that they are reducing their buying policy, i. e., where members had been anticipating requirements by 180 days, they are now anticipating their requirements by 90 days. Processes which had been increasing percentagewise were now levelling off, and while few reported lower prices, the percentage reporting higher prices was lower than it had been for a long time. Backlogs of orders were decreasing, and in a number of cases, considerable cancellations of unfilled orders were reported. If subsequent reports show a continuation of this trend, we will feel certain that a change has occurred. This will no doubt foreshadow a change in what salesmen, acting as the eyes of the purchasing agents, are going to have to do.

Now more than ever, the purchasing agent is going to need and use good eyes. Salesmen more than ever, are going to have a chance to be of real service to the purchasing

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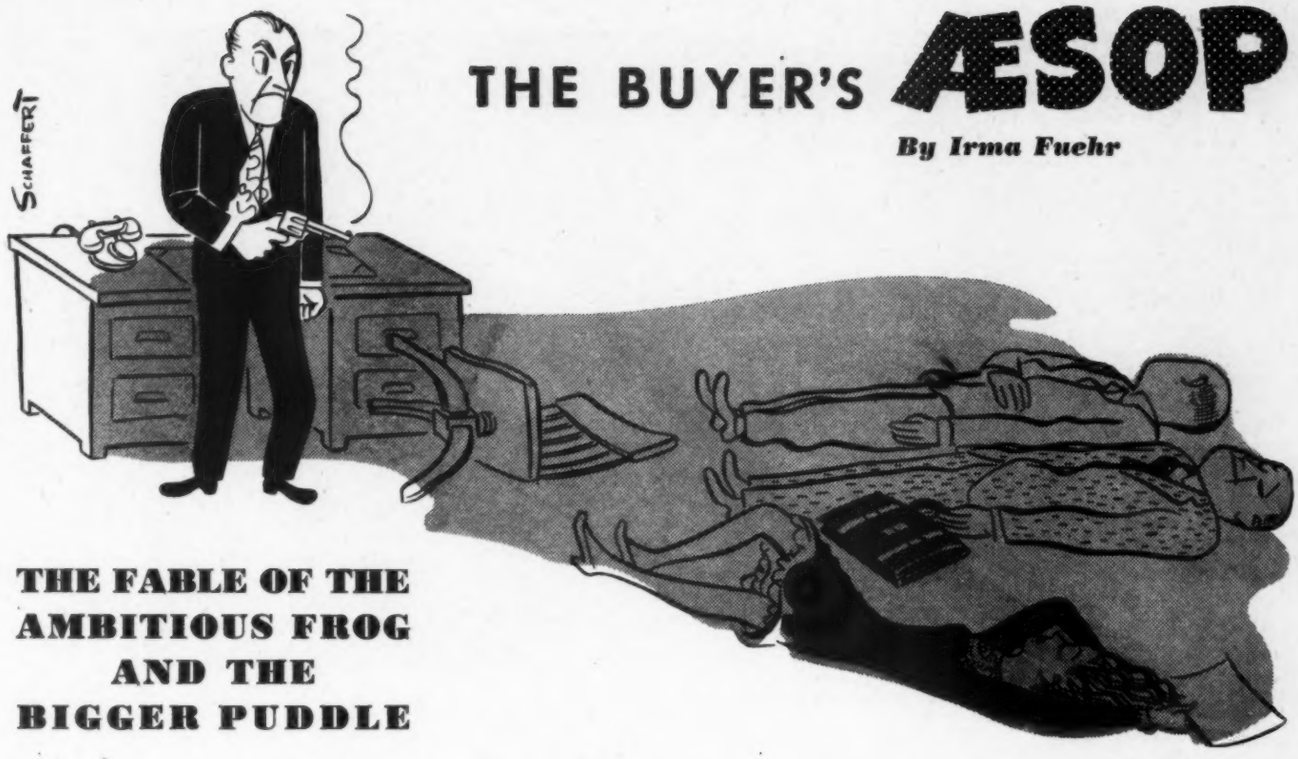
THE BUYER'S ÆSOP

By Irma Fuehr



THE FABLE OF THE AMBITIOUS FROG AND THE BIGGER PUDDLE

THIS is a drama in three acts, which might have been entitled "Purchaser's Progress". The hero might be you.

I.

Time: 1935. Place: Do-Well Diecasting Company, Middletown. Characters: A purchasing agent and others. As the scene opens, the p.a., a handsome, wholesome, healthy, intelligent egg of about thirty, sits at his desk chewing a cigar and playing thoughtfully with a letter. His secretary sashays in.

P.A.: "Do-Better Diecasting in Bigtown needs a director of purchases. Think I'd stand a chance?"

Sec.: "Don't you know when you're well off, boss? Here everybody looks up to you. You've got a nice house, good friends, a steady income. What more can you ask? I always say, it's better to be a big frog in a little puddle than a little frog in a big puddle. Or, as literature has it, it's better to be first in a little Iberian village than to be second in Rome, if you'll forgive my scholarly allusion. Anyhow, don't go to Do-Better!" (She sashays out. A salesman enters.)

P.A.: "Do-Better Diecasting needs a director of purchases. What do you think about—?"

Salesman: "Oh, I don't know. I always say it's better to be a big frog in a little puddle than a little frog in a big puddle." (He sashays out. Friend enters.)

P.A.: "Do-Better Diecasting Company needs a new director of purchases. What do you—?"

Friend: "Don't kid yourself. I always say it's better to be first in New Middletown than to be second in New York. Longfellow and Caesar agree with me on that point. Don't do it." (Friend sashays out.)

P.A., wistfully: "I'm not a frog and Do-Well isn't an Iberian village. But— I guess—" (He tears up the letter as the curtain falls.)

II.

Time: 1940. Still at Do-Well. The purchasing agent is again fiddling with a letter, opportunity having outdone herself and knocked twice. His secretary sashays in. He is silent until she sashays out. He is also silent as a salesman and a friend sashay in and out. Then he tiptoes stealthily over to the telephone and asks for an outside line.

P. A., into telephone: "Western Union, I want to send a telegram to Do-Better Diecasting in Bigtown."

As the curtain drops, the p.a. is prowling uneasily about his office, his cigar just a tattered shred of tobacco leaf hanging doubtfully from his mouth. He mutters. "Maybe I'm overrating myself, but the die is cast. Gosh, what if I fall flat as an overripe tomato?"

III.

Time: the present. Scene: Office of the director of purchases at Do-Better Diecasting Company. As the curtain rises, our hero is clearing off his desk, ready to leave for Do-Best Diecasting Company in Biggest-Town. Another secretary, salesman, and friend hover about him obstructingly.

Secretary, salesman, friend, in chorus: "Don't you know when you're well off? Here you've got a nice house, good friends, a steady income. Why risk it all? Like I always say, it's better to be first in a little Iberian village than to be second in Rome. Also, like I always say, it's better to be a big frog in a little puddle than a little frog in a big puddle. You're making one hell of a mistake in going to Do-Best Diecasting!"

P.A., shouting as he snatches out a .45: "Did it ever occur to you that I might become a big frog in a big puddle? Take that, you ninnie! Take that, you numbskull! Take that, you bonehead! Take that, and that, and that!"

Having shot all three, he steps over the dead bodies, goes into a clinch with his wife, who has been watching tenderly from the doorway, and with her he vanishes in a glorious technicolor fade-out.

Moral: Friends may like you but they won't overrate you. *And/or*:

Stay in the hillage
Of an Iberian village
Only if you actually prefer villages.

N.A.P.A. President Aljian brings greetings to the members of District No. 7

SOUTHEASTERN PURCHASING AGENTS

WITH registered attendance closely approaching the 200 mark, the series of annual conference meetings of Southeastern Purchasing Agents—District No. 7, N. A.P.A.—which had been interrupted during the war years, were resumed with a highly successful two-day conference at the Thomas Jefferson Hotel, Birmingham, October 10th and 11th. Previous conferences were held at Birmingham in 1940, and at Chattanooga in 1941. At the District Council meeting in Tampa a year ago, it was unanimously decided that this constructive activity should again be undertaken as soon as hotel and travel conditions permitted, and the Alabama Association volunteered to serve as host for the first postwar conference.

The meeting was well timed, and the program keyed to current purchasing problems. Notable also was the representative nature of the gathering. Three additional associations—Florida, Georgia, and Memphis—have been organized in the District since the previous conference, and representative delegations from these groups were present as well as from the longer established Alabama, Chattanooga and Louisville Associations.

The following members of the Alabama Association headed the conference committees:

General Chairman, George H. Cole, Alabama Power Company.

District Coordination, Harlan E. Cross, Sloss-Sheffield Steel & Iron Company.

Program, George L. Wilson, Jefferson County Commission.

Hotel Arrangements, Clyde H. Porter, Alabama By-Products Corporation.

Registration and Reception, Fred W. Witherington, Southern Car & Manufacturing Company.

Finance, Barnie B. Jones, Jones & Armstrong Steel Company.

Publicity, Quin Cather, Cather Brothers Printing & Publishing Company.

Banquet, Herschel A. Wilson, Long-Lewis Hardware Company.

Golf, Allen Rushton, Birmingham Ice & Cold Storage Company.

Plant Visitation and Sight Seeing, L. C. Teague, Tennessee Coal, Iron & Railroad Company.

Southern Progress

General Chairman George H. Cole called the conference to order and presided at the opening session on Thursday morning. Dr. Marvin A. Franklin of the Highlands Methodist Church delivered the invocation. The delegates were welcomed by T. Hoyt Prater of McWane Cast Iron Pipe Company, President of the Alabama Association, and Hon. W. Cooper Green, President of the Birmingham City Commission.

Theme of this session was "Southern Progress Through Purchasing". This topic was developed in two addresses. Lewis M. Smith, Vice President and Director of Public Relations, Alabama Power Company, spoke on "The Purchasing Agent and Public Relations". Dr. Howard T. Lewis, Professor of Marketing, Harvard Graduate School of Business Administration,

and Editor of the *Harvard Business Review*, spoke on "The Economics of Purchasing". Both of these addresses are reported in detail in this issue. Edgar E. McCulley, Purchasing Agent of the Courier-Journal Job Printing Company, Louisville, led the discussion following Mr. Smith's paper, and Martin Sunderland, Purchasing Agent for the Memphis Union Station, discussed Dr. Lewis' thought provoking presentation.

Current Problems

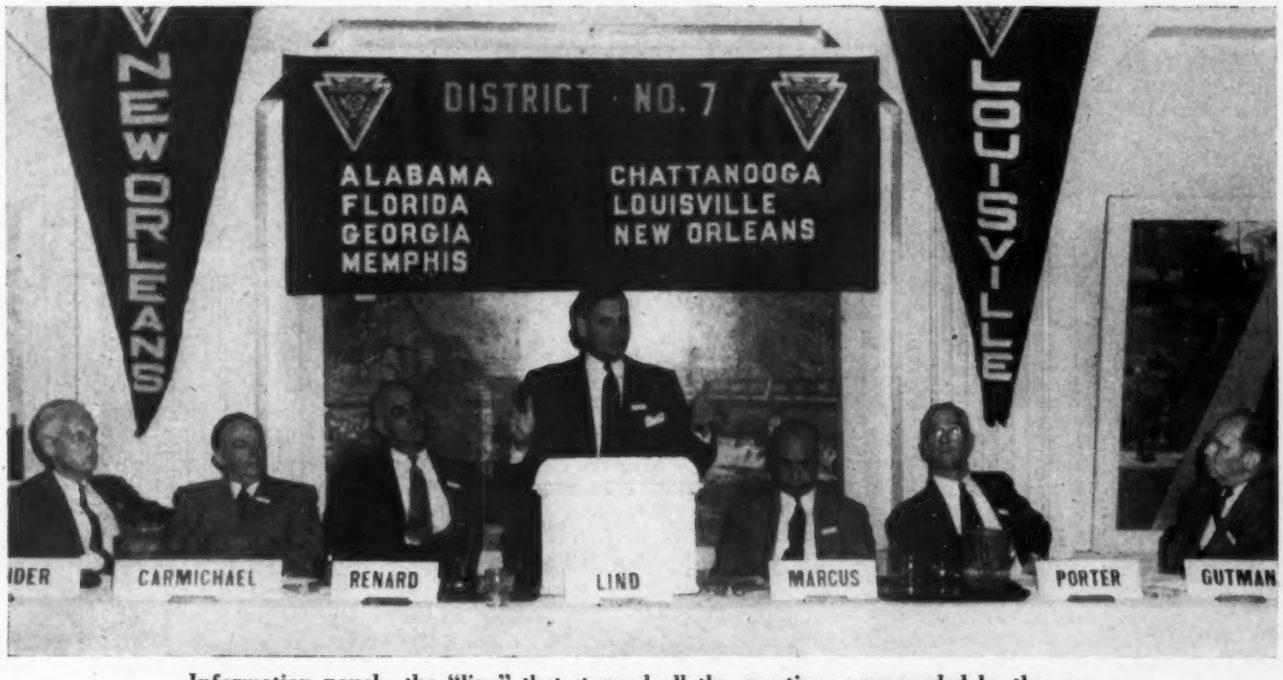
Thursday afternoon's meeting was devoted to the topic, "Current Purchasing Problems". W. E. Rier, Purchasing Agent of the Rotary Lift Company, Memphis, and National Director of the Memphis Association, presided at this session. He introduced as speakers, George A. Renard, Executive Secretary of the National Association of Purchasing Agents, New York, and George W. Aljian of San Francisco, Director of Purchases and Packaging, California & Hawaiian Sugar Refining Corporation, and President of N.A.P.A.

Speaking under the familiar title "From One P.A. to Another", Mr. Renard warned of the uncertainties inherent in the present economic situation, pointing out that conditions vary widely in respect to different materials and industries, resulting in highly selective markets and calling for the exercise of informed judgment on the part of purchasing men. While economists are divided in opinion as to the probable timing of the transition from sellers' to buyers' markets, he declared that no clearly defined trend is to be expected—that the turning point may already have been reached in some industries, and that other products might continue in short supply for an extended period due to the fact that specialized production facilities are not in balance with immediate demands even though the overall facilities of an industry might be ample, judged merely on a tonnage basis. The fundamental responsibility of the purchasing man is unchanged in these changing conditions; he must adapt his policies and program to the prevailing conditions. At the present time, the subjects that must have priority in business thinking are these: We must have (1) high national income, (2) a high rate of employment, and (3) high unit productivity. And in the long run, the law of supply and demand, rather than any artificial regulations and controls, will prevail. A more detailed report on Mr. Renard's address appears elsewhere in this issue.

President Aljian posed the question, "How Big Is Our Job?" The

IN CONFERENCE AT BIRMINGHAM

- Excellent program and keen interest mark third annual District meeting



Information panel—the "line" that stopped all the questions propounded by the conference: *r.e.*, Alexander, of Chattanooga; *r.t.*, Carmichael, of Atlanta; *r.g.*, Renard, of New York; *c.*, Lind, of New Orleans; *l.g.*, Marcus, of Louisville; *l.t.*, Porter, of Birmingham; *l.e.*, Gutman, of Louisville.

CLAYTON RAND
Gulfport editor, whose sparkling wit enlivened the banquet session

answer to this question, he declared, depends on the horizons that purchasing men set for themselves in the scope of their function and in respect to their company's needs, and, equally important, on the extent to which they equip themselves for making constructive contributions to the company's operation and assuming wider responsibilities. The potentialities are limitless, going beyond the obvious and routine concern with requisitions, sources of supply, and prices. The alert purchasing man will find possibilities for constructive service in anticipating requirements and suggesting improvements and economies regarding packaging materials and methods, materials handling equipment, power plants, and the like, as well as advising on inventory policies and other factors of the basic materials program. He cited the example of a forward looking purchasing man who was constantly a year or more ahead of company requirements in his thinking and has consequently made of the purchasing department and of his own position a vital and leading force in company policy and operations. In conclusion, Mr. Aljian decried the attitude that seeks professional status for purchasing, since the more complete realization of purchase possibilities lies in the direction of functioning in an executive capacity.

Information Panel

Following these addresses, Fred A. Lind, Purchasing Agent of the Louisiana Coca-Cola Bottling Company, New Orleans, took over the rostrum as chairman of an information panel to comment on questions raised by those present. In a unique, fast moving, and highly effective method of handling his assignment, and in keeping with the spirit of the season, Mr. Lind visualized his panel members as a strong defensive football line, ready to cope with any difficult or baffling plays which might be thrown at them. He introduced the "players": at right end, James M. Alexander, Purchasing Agent of the Cavalier Corporation, Chattanooga; right tackle, J. R. Carmichael, Supervisor of Purchases and Stores, Georgia Power Company, Atlanta; right guard, George A. Renard; left guard, Cal Marcus, Purchasing Agent of Edward H. Marcus Paint Company, Louisville; left tackle, Clyde H. Porter, Purchasing Agent of the Alabama By-Products Corporation, Birmingham; left end, H. W. Gutman, Purchasing Agent of the Standard Oil Company of Kentucky, Louisville. Mr. Lind, at center, had the job of "passing the ball" to his colleagues. Carrying out the football theme, the questions were classified under four general headings, each group to constitute one "quarter" of the game.

Mr. Lind blew a whistle, and the first quarter was on, discussing questions on the fundamentals of purchasing organization. Mr. Marcus read questions that had previously been submitted, and further questions were invited from the floor.

Question: Is it desirable that purchasing and stores operations be under one head?

Answer (Carmichael): Yes. Such organization makes for complete and effective inventory control; the purchasing department knows just what materials are on hand at all times; the centralized authority promotes better coordination with storekeepers.

Question: Outline the best procedure and flow of work in the purchasing department.

Answer (Alexander): No one procedure can be set up as the best for all companies; it must be adapted to the type of industry and operation, size of company, and similar factors.

Question: What educational or training program will best fit purchasing department employees to take on greater responsibilities?

Answer (Renard): For success in purchasing, it is necessary to serve an apprenticeship in buying, just as the medical school graduate acquires experience as an interne and the law school graduate starts by "reading law" in an established office. By a similar process, you can make a pretty good purchasing agent of the man who has the right background of knowledge of products and their uses. Desirable qualifications include a knowledge of production work, stores operations, and the interrelationship of various company departments.

Question: What information and conditions should be printed on purchase order forms?

Answer (Gutman): It should be identified as a purchase order; show the name of the company; have a number, and instructions to use that number on shipments and in correspondence relating to the order; spaces for vendor's name, quantity, description and price of the items ordered; f.o.b. point and terms of payment; instructions for acknowledgement and invoicing; and an authorized signature.

Question: What is the scope of purchasing department responsibility in respect to the timing of orders for delivery of goods when needed?

Answer (Porter): It is the responsibility of management to see that purchasing is advised of requirements promptly enough that they may be ordered in time. (Renard): Responsibility and authority in respect to any phase of buying will find their own level according to the purchasing agent's ability to handle the problems.

Inventory Control and Records

After a brief intermission, the whistle announced the beginning of the second quarter, on the subject of inventory policy, stores control and records.

Question: What is a sound inventory policy to adopt when and as materials again become available in fair supply?

Answer (Alexander): Our company carries no speculative inventory, but aims to adjust purchases to actual or estimated use. Every item must be separately considered, and policies may differ on different items. For example, cedar lumber is seasonal in supply, being largely produced for market in the farmers' off-season; therefore we buy all we can when it is available. (Gutman): Timing and quantity of purchases must take into consideration labor conditions in the supplier industry, market price, and a variety of local conditions. (Porter): The war taught us that we can get along on much smaller maintenance inventories than we used to carry.

Question: What purpose is served by commodity records maintained in the purchasing department?

Answer (Carmichael): We do not maintain stock records in the purchasing department, feeling that this would be merely a duplication of information recorded elsewhere. This is particularly true because the stores department in our organization comes under the purchasing department. We have available the record of last cost, the inventory record at the warehouse, and the record of usage through inventory and "in and out" cards. The only exceptions to this are the purchases that are made for use on a specific job and are delivered direct without passing through stores.

Question: What will prices do over the next several years?

Answer (Renard): You will do well if you can figure that out for even the next several months. It is the concensus among purchasing agents that some few price controls will continue in view of the scarcity of materials. Otherwise the law of supply and demand will govern.

Question: Has opinion on price control changed because of the present confusion

Answer (Renard): Yes. Up to last spring, purchasing men generally favored the gradual relinquishing of controls; now they favor dropping controls. Controls should not have gone off abruptly as they did, but, once off, they should not have been put back on. The most effective method of control would be bulkline pricing, establishing a price level that will bring out the quantity of production needed, but not subsidizing uneconomical production beyond that point. The practical policy is to disregard the effect of price controls from here in.

Question: If you buy at an established price at the beginning of the month, and prices increase at midmonth, how can the difference be charged off?

Answer (Gutman): By using average price on total inventory at time of use. (Renard): Last-in-first-out pricing is effective on fluctuating markets, and is most closely keyed to current markets. (Lind): First-in-first-out pricing is the most realistic, and permits inventory valuations to be carried at actual cost. Any of the standard methods are acceptable for accounting and tax purposes, but you are not permitted to change your practice for temporary tax advantage; you must follow a consistent policy.

After a mid-game stretch, the whistle blew for the third quarter, covering the broad field of purchasing policies, escalator clauses, production outlook, and considerations of the sectional economy.

Question: Should the purchasing agent sign contracts containing escalator clauses?

Answer (Renard): The important thing is to distinguish between a real escalator clause, which automatically adjusts the price in accordance with variations in stated factors of cost, and the loose and inaccurate use of this term in connection with open price adjustment clauses. The latter are the dangerous ones. A contract calling for "price at time of delivery" is just like handing a blank check to the vendor. There may be need for price adjustment clauses under present conditions, but they should provide for adjustment in which both the buyer and seller should have a voice. For example, a price change should not be effective without reasonable notice, such as 30 days, and the buyer should have the privilege of cancellation. (Gutman): A real escalator clause does just that; it is a case of give and take.

Question: How does steel production compare with wartime production and where is the major tonnage going?

Answer (Porter): Steel production is off by 15 million tons as compared with last year. This is largely due to strikes, inability of producers to get coal, etc. Producers are not taking orders beyond six months. Exports are limited to 6% of total production. One of our chief difficulties is that we are off balance as to types of steel that can be produced. We have plenty of capacity for the heavy plate needed for war purposes, but we haven't enough capacity for the sheet and strip items that make up present demand.

Question: What course should a purchasing agent follow when he has the choice of placing orders direct with a distant producer or with a nearby agent?

Answer (Carmichael): It depends partly on the price. You can afford to pay the distributor 5% more when you figure the saving in warehouse space and investment. There is also a question of what service you can get from the distant supplier. By giving the distributor credit for the order, this can sometimes be used as a trading advantage on other items. (Porter): It is usually good policy to give the distributor a break on quantity business. (Lind): Whenever possible, favor the local source. (Gutman): Remember, you have to live with the local firm.

Question: To what extent should a buyer consider the sectional economy in placing business?

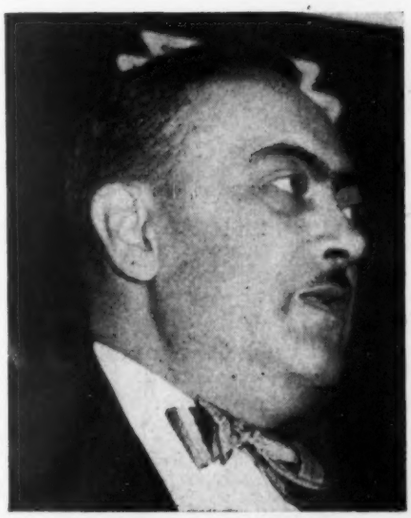
Answer (Lind): It is not always possible, but a good rule would be: (1) buy local when possible; (2) try to buy southeastern products; (3) buy the goods wherever you can get them.

Question: What is the reason for textile mills' failure to make the type of goods needed by institutions and industries, and what can be done about it?

Answer (Louise Capps, Purchasing Agent and Vice President, Crestex Mills): It has been largely a matter of price ceilings. Mill production has naturally and necessarily switched to the more profitable items. As a matter of fact, the situation is easing; shoppers are finding heretofore scarce items now offered by the stores, and this should result in less active demand for household textile products. A good deal of this demand has been psychological, prompted by newspaper reports of shortages. Because of this, there has been an abnormal tendency on the part of householders to buy and stock such items in far greater quantity than they would ordinarily do, in the fear that they might not be able to get them when needed. It has been a case of "inventory hoarding" by consumers.

Question: Can anything be done to curb the publication of such reports of actual and predicted shortages by the newspapers?

Answer (T. A. Corcoran, Purchasing Agent, Louisville *Courier-Journal*): It is the function of the press to print the news, accurately and completely, without regard to



STUART F. HEINRITZ:
"The real future of purchasing depends on what others think of us"

SPENCE FLINN
Past District Vice President, presided over the Friday business session

the effect on special interests of any group. This is a problem which is constantly arising in every newspaper office, but if news were deliberately suppressed because someone is adversely affected, there would be no news at all and the press would fail in its function.

Question: When may we expect delivery schedules on capital equipment to shorten?

Answer (Alexander): No generalization is possible. Delivery promises now vary from 12 to 24 months or longer, depending on the type of equipment wanted. (Renard): It is probable that the peak of demand has already been reached or passed. When that condition prevails, delivery schedules will feel the effect from both ends—higher production schedules on the one hand, and tapering off of forward orders. There should be a noticeable change in this situation by the spring of 1947. One other important factor is that we have already stopped shipping 25% of our machine tool output to Russia.

Departmental Relations

The fourth quarter whistle introduced a discussion of the purchasing department's relationships to those with whom the buyer comes in contact.

Question: What type of report should the purchasing executive make to company management?

Answer (Alexander): If management is competent, it knows what the purchasing department is doing from inventory and accounting reports. Management is a matter of team work. In our company, the purchasing agent sits in on the monthly meetings where policy and plans are discussed, and participation in these meetings serves the purpose of a report. (Carmichael): The purchasing officer should attend all staff meetings of his company, and there report on price trends, shortages, and what is ahead for 30 to 60 days in regard to materials. (Renard): It is essential for sales and production departments to know when they can get materials to process and sell. You can't develop a production program without knowing when materials for that program can be had.

Question: What are some of the ways and means by which a company's public relations can be improved through the purchasing department?

Answer (Carmichael): The best way, especially in a utility company, is to see that the customers are satisfied. It is a good rule in all dealings to act as if you are representing the company, and not merely representing the purchasing department.

Question: To what extent should reciprocity be considered?

Answer (Gutman): Reciprocity is bad only when it is abused, as when a salesman uses the argument to force the purchase of things you don't want and can't use. It is legitimate and proper when it works to the mutual benefit of both companies involved. All other things being equal, the practice of reciprocity makes sense. (Renard): Reciprocity is the natural outcome of human relations. There is no harm in it up to the point where it penalizes the company in the way of excessive and uneconomic costs.

The $64 Question: When will the sellers' market end and develop into a buyers' market?

Answer (Renard): The change will come gradually, faster in some industries than in others. The sellers' market is already a thing of the past in respect to some products. (Porter): The change would be effected more rapidly if artificial controls were removed. Remember that every seller has to be a buyer first, and has his own problems of procuring supplies. Scrap iron and soil pipe are both scarce, and you need the one to make the other, yet OPA has ruled that you can't swap scrap for soil pipe.

Chairman Lind brought the session to a close promptly at the scheduled time, and received a hearty round of applause for his excellent handling of the forum.

Acting on the premise that "All Work and No Play Makes P. A. Jack a Dull Boy", serious business was ruled off the program for Thursday evening. The delegates and their ladies gathered for a delightful cocktail hour and get-together, and then proceeded to the banquet hall.

George L. Wilson, Conference Program Chairman, presided at the banquet, introducing the members of the Seventh District Council and other guests of honor at the head table. There was a brief interlude of music and comedy entertainment. Then Mr. Wilson introduced the speaker of the evening, Clayton Rand, editor, author, and storyteller extraordinary, of Gulfport, Mississippi.

The subject of Mr. Rand's address was "The Over-Education of the Unintelligent," which he regards as one of the chief reasons for our confusion and economic troubles today. He developed his theme in a witty and sparkling conversational manner, which nevertheless had a serious undertone, pointing out the fallacies and dangers of bureaucratic government. Current political ideologies, which are a far cry from the basic principles of democracy, constitute a serious threat to American liberties and prosperity, he declared, and we had better do something about it before it is too late. If on any given date, he said, a representative body of Americans should decide not to be bound by clearly undemocratic regulations, we would quickly come back to national sanity.

Looking to the Future

The Friday morning business session was devoted to the topic, "Future Developments in the Field of Procurement". Presiding at this session was W. S. Flinn, Purchasing Agent of The Simplicity System Company, Chattanooga, and immediate Past District Vice President for District No. 7, N.A.P.A.

First speaker was Thomas D. Jolly, Vice President (Purchases and Engineering) of the Aluminum Company of America, Pittsburgh. Mr. Jolly spoke on "The Buyer-Seller Relationship". He decried the increasing use of over-complicated contract forms and clauses designed to shift the normal responsibilities and risks of sellers to buyers, and *vice versa*. A company should not try to sell, he said, on a form of contract that it would be unwilling to have its own purchasing agent accept as a buyer. He proposed a form of agreement, to be entered into between major customers and major

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DISTRICT ACTIVITIES PROGRAM

By Harlan E. Cross
Purchasing Agent
Sloss-Sheffield Steel & Iron Company
Birmingham

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LONG before the spring of 1945, when the idea of a District Activities Committee took definite form at the 7th District Council meeting in Chattanooga, there was a feeling in the minds of several purchasing men in the Southeast that somehow, and through some type of organization, more thought should be given and plans made for intensive activities on a District-wide basis that would directly benefit the purchasing agents of these Southeastern States.

As far back as 1939, under the leadership of T. A. Corcoran, then Vice President of District No. 7, the thought was disseminated among the national directors of the four Associations that then comprised the 7th District of N.A.P.A.—Birmingham, Chattanooga, Louisville, and New Orleans—that a one-day conference held by the purchasing agents of these groups for the purpose of discussing purchasing and economic problems pertaining to this section would be most helpful in many ways. In the fall of 1940, these thoughts bore fruit, and culminated in the first District-wide Conference of Southeastern Purchasing Agents at Birmingham. The next year the event was successfully repeated with Chattanooga as the host city.

The war came on. With travel restrictions, and with our hands full trying to secure sufficient materials to keep our plants running, the conferences were omitted from 1942 to the present. Ever present during those three years, however, was the dormant thought that more activities of a similar nature should be engaged in, and that some group within our District membership — not quite so busy with Association affairs as our District National Directors — should be formed to make plans for such further activities.

Hence, at the spring Council meeting in 1945, through the coordination of ideas advanced from men throughout the District, a committee was authorized by the District Council to be known as the "Seventh District Activities Committee," to work under the authority of the District Council. Its purpose was to formulate and coordinate policies relative to plans and projects especially engendering the advancement of the membership of the Associations of the 7th District, and thus both to strengthen their status and influence within the N.A.P.A., and also to work toward the advancement of the purchasing profession and the economic position of this section through sound purchasing policies and practices within our area.

District Vice President W. S. Flinn appointed Harlan E. Cross of Birmingham as Chairman of this committee, with authority to form the committee by selecting one member from each Association in the District, now comprising seven active groups instead of the original four. The tenure of the members was to be for a period of three years. The committee was officially confirmed by the District Council at a meeting in October 1945, at Tampa, Florida.

It was at the Tampa District Council meeting, last fall, upon this committee's recommendation, that plans were formulated to resume the District Conferences so successfully held in 1940 and 1941, upon an enlarged scale. The invitation of the Alabama Association to hold the meeting in Birmingham was accepted. A major league team of conference committees was immediately lined up by the Alabama Association. Today our hats are off to this group of men who have so ably carried out the request of our District Activities Committee for a really first rate conference. Through this wonderfully planned and managed conference, the purchasing profession and Southeastern purchasing agents have been elevated and magnified, not only before the eyes of the Southeast, but of many

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Report given at the Third Annual Conference of Southeastern Purchasing Agents, Birmingham, October 11, 1946.

DISTRICT ACTIVITIES COMMITTEE
DISTRICT NO. 7
N.A.P.A.

Chairman — Harlan E. Cross, Sloss-Sheffield Steel & Iron Company, Birmingham

Alabama Association — George H. Cole, Alabama Power Company, Birmingham

Chattanooga Association — W. Spence Flinn, The Simplicity System Company, Chattanooga

Florida Association — Jerry L. Watson, Florida Power Corporation, St. Petersburg

Georgia Association — J. R. Anthony, Georgia School of Technology, Atlanta

Louisville Association — Edgar E. McCulley, Courier-Journal Job Printing Company, Louisville

Memphis Association — W. E. Rier, Rotary Lift Company, Memphis

New Orleans Association — George C. Gabler, Eagle Asbestos & Packing Company, New Orleans

THE PURCHASING AGENT AND PUBLIC RELATIONS

By Lewis M. Smith
Vice President
Alabama Power Company
Birmingham

A three-way plan by which the purchasing man can help enhance the position of his company, his industry, and his community

THE whole nation is turning its eyes toward the South. We are waking up. We are surprising many of our own people by what we can do. We have made tremendous progress in recent years but the real job has just been started.

Just in case some of you need to be reminded that the spotlight is on us, let me enter here the testimony of a few witnesses.

Spotlight on the South

The New York Trust Company Index has concluded that:

"The continued industrial development of the South seems naturally and logically indicated. Its wealth of resources, its favorable climate, its ample power supply, and its other advantages may well make this region in the postwar period the new industrial frontier of the United States."

Mr. Donald Nelson, former Chairman of War Production Board, has said:

"The South is no longer America's Economic Problem Number One, but America's Economic Opportunity Number One. It has always had great material resources and a favorable climate. But now it has in addition two other resources that it once lacked. Today, largely as a result of the war, it has industrial know-how on a large scale, both among managers and workers. Today it has substantial accumulations of local capital. Throughout history, resources, know-how and capital have always been an unbeatable combination. Add the fact that the level of per capita purchasing power is rising more rapidly in the South than in any other great region, and I say flatly that the South cannot be prevented from moving swiftly into an era of industrial and social development that will astound the world."

Mr. Carl B. Fritsche, Vice President, Reichhold Chemicals, Inc., tells us that:

"The trend towards the South had already started and it will continue so long as the basic raw materials are available and so long as local state governments create and maintain a healthy climate for industrial expansion."

Mr. Hal S. Dumas, President, Southern Bell Telephone & Telegraph Company, says:

"The South, in many ways, is the hope of the country as a whole. We are now faced with the opportunity of building in the South the finest and most fertile civilization in which men have ever lived —a civilization in which all men can possess a sense of personal dignity. There is a need to shed complacency and do the job that needs doing. And one of the most important of these is to produce, utilizing our own resources, the goods the South needs and in sufficient quantities to supply the demands of our own people."

You will all agree, I am sure, that these heartwarming comments were made in good faith. They speak not only of what is happening in the South but of what is likely to happen. In every case they speak of expanding industry by private enterprise as the thing that prompts such optimism about the South.

Certainly there is no question but that the South is on the threshold of an era of great industrial expansion. New industries are springing up. Many existing industries are expanding. Large national firms that want to decentralize are looking our way. The market for goods of all kinds, at home and abroad is bigger than ever.

A new spirit of enterprise is showing up. We now have more progressive organizations, such as the Association of Purchasing Agents, various trade associations, Chambers of Commerce, colleges and universities, farm organizations, newspapers, manufacturing plants, banks, railroads, power companies, telephone companies and other public utilities—all working for the South's industrial and agricultural development. We have in the Southern Research Institute here in Birmingham a long-looked-for answer to new industries, new products, more jobs and greater wealth. We must use all of these assets and more to fashion the kind of a South we really want, industrially and commercially.

In discussing the purchasing agent and public relations we find that in this program for greater Southern progress he has three significant opportunities.

Representative of His Company

The first of these opportunities has to do with the public relations of his own company or institution. Today, management's greatest responsibilities are in the field of public relations. These embrace relations with employees, stockholders, customers, the community, the government, and with other influential groups. The art of getting along with all these groups, the making of more friends and fewer enemies among them is a job of outstanding importance.

Public esteem can not be bought. To get it is not an accidental accomplishment. Rather, it is something that must be deserved because of the policies and operating philosophy of the company or institution with respect to all groups. It is a sort of spiritual incentive which recognizes that service and good will and the welfare of the community come first.

The true philosophy of public relations is to do unto others as you would have them do unto you.

The purchasing agent has a splen-

Address at the Third Annual Conference, Purchasing Agents of the Southeast, District No. 7, N.A.P.A., Birmingham, October 10, 1946.

did opportunity to carry out the public relations policy of his organization because he is in constant contact with those who can help him build and maintain good will for it. He is under special obligation just now not only to follow the excellent principles and standards of purchasing practice of his Association, but by example and influence to seek to have these principles and standards adopted as general business policy. Present practices in some quarters can lead to nothing but irreparable harm and to bad public relations for business as a whole.

On the other hand, here are a few suggestions that will help the purchasing agent build good public relations for his company. These suggestions are not new to the members of this Association and they are introduced here only as a reminder of some of your own adopted standards of purchasing practice.

Good public relations implies that the purchasing agent will carry out fully every agreement that he makes; that he will treat all salesmen fairly and courteously; that he will refuse to accept excessive entertainment or gifts and will let all salesmen know that such is his policy; that he will discourage salesmen who want to give him confidential information regarding his competitors; that he will buy only from firms who in the manufacture and sale of their products practice good business ethics; that he will refrain from trying to buy below reasonable prices by means of concessions to be obtained by unfair methods, or to seek to buy at prices below those which are available to other customers in circumstances similar to his; that he will prepare purchase orders or contracts that are clear, fair and concise and will not demand services, quality, prices, deliveries, discounts, etc., not called for by the order or contract; that he will repudiate all forms of commercial bribery and black market operations; that he will adjust complaints and cancellations in an orderly and adequate manner and will be reasonable and fair when making claims for adusting his own complaints and cancellations; that he will seek to make every transaction fair and beneficial to all concerned, and a builder of good will; and that he will follow these practices consistently, so that there can be no doubt of his sincerity, remembering that word of mouth circulation of reputation molds public opinion far more than tons of printed matter.

Champion of Private Enterprise

Next to his interest in good public relations for his own company, the purchasing agent, along with other responsible leaders in business, should be deeply concerned about keeping the private enterprise system in this country.

There are those who would destroy this system and they work hard at the job. In my opinion, if half the effort now being made by political planners to destroy private business or to spend public money needlessly were put to encouraging and building up the taxpaying enterprises of this country, we would be well on our way to better schools, higher wages, a balanced federal budget, and government debt reduction.

The purchasing agent, feeling perhaps that his own individual efforts in this matter will be feeble and of no avail, nevertheless can make a real contribution to the maintenance of our private enterprise system. He can do it by helping to build a strong and dynamic peace time economy in which there will be more productive jobs, year after year, than we have ever known in this country before. This is not going to be an easy objective to reach and we are going to be tempted to relax our efforts, especially while jobs are plentiful because millions of customers are spending billions of dollars for the goods and services they want.

The importance of jobs, year in and year out, is not hard to understand because they are the basis of most of our desires, our prosperity, our happiness and our security. Fail to provide jobs and opportunities and the whole fabric of our dream will turn to ashes. Jobs do not just happen, however.

In a free economy, such as ours, jobs result from a mixture of capital, management, men and opportunity, stimulated with the hope for profit. The thing that brings them together is an idea. If we are serious, therefore, in our efforts to provide productive jobs, we will quit apologizing for living under a capitalistic system and will take on with renewed zeal the responsibility of seeing to it that within the structure of sound economic policy we maintain an environment hospitable to private enterprise, sympathetic with its incentives and necessities and approving of its rewards.

The issues to be faced in meeting this responsibility are, as we all

SEVENTH DISTRICT COUNCIL, N. A. P. A.

A meeting of the Council was held in conjunction with the purchasing conference. Left to right: A. E. Loeffler, Jr., Louisville Association; J. E. Clark, Georgia Association; R. N. Dowling, New Orleans Association; T. W. Brown, Chattanooga Association; District Vice President A. Grant Clark, New Orleans; B. B. Jones, Alabama Association; L. E. Ashley, Florida Association; W. E. Rier, Memphis Association.

know, very real, complex and inescapable. For instance, who can overlook the fact that we now have a national debt equivalent to a $9,000 mortgage on every home in this country? Some say that the debt is actually about twice that figure. We certainly must know that we have not had a balanced federal budget for around 16 years. There are still some irritating uncertainties about taxes, prices and wages.

Our political, financial and trade relations with many foreign countries are in disorder. The relationships between management and workers, and between government and industry are far from being as happy as they ought to be. Government competition with private enterprise is disturbing.

We cannot be indifferent toward these and other important issues, if we want our country to be fit for heroes to live in. We cannot be indifferent if we want to remain free.

If this recent war taught us anything it should have taught us that a free people can out-produce and live better than the people living under any other form of government on earth. People have come to our shores from around the globe to see why we, a young nation, should have the highest standard of living in the world. They found that we were not supermen, that we did not have a monopoly of the world's natural resources, or of the world's manual skills, nor all the money in the world. They did find that we had freedom —freedom of speech, freedom of religion, freedom of the press, freedom to take a constructive idea and make something out of it if we could, freedom to follow the pursuits of happiness in our own way.

Now, it's true, of course, that freedom is one of the most difficult philosophies to realize in the government of a people because the very freedom that permits progress and an ever expanding standard of living, also unfortunately permits some abuses. The thing to do is get rid of the abuses but keep the essential freedom that made this country great.

Never, perhaps, have we so badly needed a renewed and revived intelligent faith in the roots of our freedoms. Never has the challenge been so great to protect our form of government and strengthen our economic life and industrial system.

Private enterprise has brought to this nation the highest standard of living ever known in the world. It has spent millions of dollars to create public acceptance of its products. Let's quit apologizing for it. Rather, let's see that we ourselves understand it, all its problems and policies and plans and then with vigor and skill see that those on our payrolls and those we do business with understand it also. American business desperately needs good will and understanding. Here is a challenge of high order for purchasing agents to share in a real public relations job.

Promoting Regional Industry

I come now to a third suggestion. To develop adequately the subject, "The Purchasing Agent and Public Relations," we must go beyond our own business and beyond the system under which it operates and consider a responsibility to this Southern region.

N.A.P.A. President Aljian congratulates General Chairman George H. Cole of Birmingham on the success of the conference.

We have in this Southland a future that few realize. Never before have we been faced with such an opportunity to make the South blossom as an industrial and agricultural empire. Purchasing agents are in a favored spot to help in the promotion of good public relations for such a conception of the South.

For some time there has been considerable emphasis in this region on the need for greater selling effort and for improved selling practices in order to enlarge the market for Southern products. Such a program is essential and should be further developed. At the same time, purchasing practices also have their effect on the production of goods and on employment through the way contracts and orders are placed locally.

It might be helpful, therefore, if you would determine why the industrial and institutional establishments in the Southeast have not purchased processed products of the Southeast to a greater extent, and along with that inquiry find out what the prospects are for increased purchases of such products.

It is recognized, of course, that the products of other regions will always be required in quantity in the Southeast. On the other hand, it is good business for the buyer to give reasonable consideration to nearby sources of supply, as such nearby sources frequently involve economies in cost and storage and are otherwise advantageous to the buyer. The development of a better balanced economy through judicious purchasing will reflect benefits to many of our Southern enterprises and their personnel. Certainly, a reasonably industralized South will be a better customer of other sections and will strengthen our national position.

You may wish, also, to collect information about items which might be manufactured in this region or manufactured in increasing quantities on an economical basis. A few days ago, I ran across a directory of manufacturers of electrically operated farm equipment. Out of nearly 18 pages of manufacturing firms, only 8 companies were listed from the Southeast—2 from Kentucky, 4 from Tennessee and 2 from Virginia.

The omission of firms from other states in the South was perhaps an oversight, but the point is we must be ever on our toes to see that firms in this region get the consideration that is their due. There is always,

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Professor Lewis at Southeastern Conference

THE ECONOMICS OF PURCHASING

Purchasing "service" supports not only the manufacturing departments, but the company as a whole, its customers, and the national economy. Top executives expect the qualified purchasing man to think of his job on the management level

By Howard T. Lewis ● Professor of Marketing, Harvard Graduate School of Business Administration; Editor, Harvard Business Review

SUPPOSE we start by reminding ourselves of the very obvious fact that no one, not even among the professional prognosticators, really knows where we are, where we are going, or how we are going to get there. I doubt if ever before have so many people been so thoroughly confused, or have been so worried because they were so confused. Is it to be peace or war? One world or two? Democracy, fascism, or communism? Scarcity or plenty? Full employment or bread lines? Prosperity or depression? And if the latter, how soon and how serious?

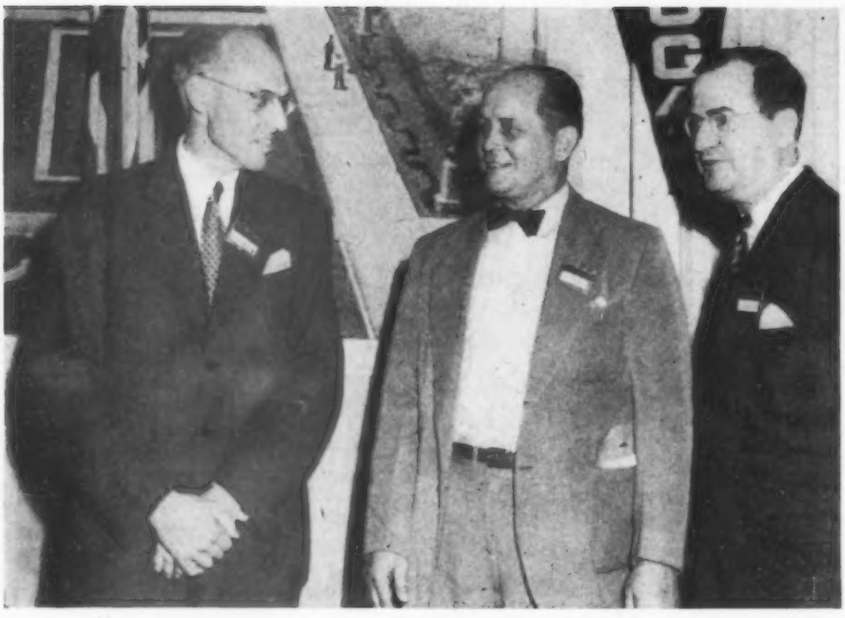
However troublesome some of the other questions may be, the question of what lies ahead for business is the most immediate and the most pressing. I suspect that each of us will find ample proof to support rationally whatever we have already concluded emotionally.

Boom Times Ahead

Certainly the outward signs, so well played up either for political reasons or because of the fear of undermining general confidence, all point to a period of prosperity such as we have seldom seen—provided, of course, we can really get moving before it is too late. Those who look for at least four or five years of a high level of business activity, in the last analysis, base their reasoning on the existence of a still enormous deferred demand and on the still enormous latent buying power. They point out that only a beginning has been made in satisfying that demand. Indeed, in the automobile field (which many contend is the key industry) the supply is probably farther behind the demand than it was a year ago.

To this fundamental factor the optimists add a number of intangibles, such as the demonstrated results of the American will to produce, so amply proven during the war; the possible development of some great new industry, or even of such a revolutionary development in existing products, such as automobiles, as will make present plans and equipment obsolete. They point to

Address Before The Third Annual Conference, Purchasing Agents of the Southeast, District Seven, N. A. P. A., at Birmingham, Alabama.



Professor Lewis (left) chats with Seventh District leaders W. E. Rier of Memphis and George H. Cole of Birmingham

the possibility of a huge foreign trade development. They even emphasize the fabulous backlog of natural resources in the country and our failure to meet such national needs as new roads, bridges, schools, flood control, and other public improvements. Basically, however, the optimists base their arguments on the backlog of demand for capital goods, arguing that not only the United States, but "all the world needs American equipment."

All of these generalizations are supported by a great array of the very tangible facts. Income payments are at an all time high. Output of bituminous coal, crude oil, and electric power are not only above what they were a year ago, but are well ahead of the 1941 average. Expenditures on new plants and equipment more than doubled in 1945, and these expenditures have continued at a high rate in 1946. Retail sales are at unprecedented levels. Bank deposits and new life insurance figures are at an unbelievably high level.

Fear of Depression

Yet in spite of all these very real bases for optimism, it is interesting to note that "a basic characteristic of the American attitude today is the universality of the belief that a catastrophic depression is unavoidable; that it will come somewhere about 1950 (or sooner). The unanimity is striking: one of the fundamental drives of the prosperity chasing of 1946 is the belief that the boom is fleeting." "Dr. Gunnar Myrdal, famous Swedish economist, predicts a postwar U. S. economic crisis that will bring to a head, with serious effects upon world economy, the deflationary crisis of the early '20's and the depression of 1929-32. Other economists here and in Europe share his views. By 1950, hardship and hunger may be with us again, and the only one to gain will be Russia, who will attempt to use world economic disintegration for her own ends. In such a crisis, world peace system of free enterprise would be at stake."

Are there any tangible evidences to support this general undercurrent of pessimism? For one thing, the Department of Commerce estimates that the manufacturers' inventories are up to a record high of $800,000,000 with good prospects of another $800,000,000 by the first of this month. Half of this is in raw materials; the other half divided equally between goods in process and finished goods. True, about 20% of this rise, more or less, is due to higher evaluation, but it is also well known that inventories are very badly balanced. Furthermore, management has clearly lost some of its earlier enthusiasm. A shortage of skilled labor still exists, manpower production is very disappointing, the old argument that higher wages in the United States are offset by higher manpower production seems now to be open to some question. Strikes have and will continue to very seriously interfere with production, and it would be interesting to know how long we shall continue to "buy off strikes." Profit prospects to many do not seem to warrant plant or equipment expansion on any extensive scale.

The stock market decline is discounted, but those with long memories recall it was just one year after the 1918 armistice that the stock market took its first big header, and that decline did not disturb the general equanimity of merchants — at first. World War I, too, ended with money rates plentiful, interest rates low, but to retard speculation, the Federal Reserve boosted the discount rate from 4 to 4¾ in November, 1919, and to 6 in January because businessmen were borrowing to buy inventories, bank loans were rising, and the banks short of reserves were calling on the reserve banks for money.

That is all happening again. Commodity prices are today higher than at any time since the previous inflation of 1920, the second highest since the Civil War. Business loans are reaching new highs week after week; interest rates are up; commercial banks are hard pressed for free funds, only this time instead of borrowing at reserve banks, as in 1919, they are selling government bonds. And to continue the analogy, and I quote from a Federal Reserve Bulletin of 1920, there are "labor difficulties, and unrest, and foreign problems, strikes and threats of strikes, strained international relations." All of these things are as characteristic of 1919 as they are of today.

It's Up To Management

Being neither an official nor an unofficial forecaster, I cannot indicate when the leveling off process or the decline is likely to come, particularly since to predict business conditions four or five years in advance is a most dangerous undertaking in this uncertain world.

I have a feeling that the current boom—if one chooses to call it that —is based primarily on the return of 10,000,000 to 14,000,000 men and women to civilian life, and to the fact that the non-military population was for four years limited to 85% of its prewar consumption of nondurable goods. This cannot go on indefinitely—in fact, most goods in this category should be in fairly plentiful supply by next summer or fall. This boom is already showing signs of passing. And then the real test will come.

If business confidence in the future still continues, if reasonable

profits for the future are in sight, and if labor is willing to do its share (and these are real "if's"), I am inclined to agree with my colleague, Professor Slichter, that it is quite probable that there may be a tremendous boom in durable consumer goods, and in industrial capital and construction. Finally, it is usually characteristic of business expansions that rising output of durable goods and capital goods induces, through augmented employment and pay rolls, an expansion in the production of non-durables. So, although I repeat that I am no forecaster, it may well be true, in spite of some doubts, we shall have good business through three or four years to come.

But regardless of the particular month-by-month trend of business, in the years ahead the thing I should really like to emphasize is that our one chance of preserving intact our American system of living, and perhaps our one chance of preserving the maximum liberty and dignity of the individual lies in the maintenance of a high level of employment; that the responsibility for the burden of the maintenance of this so-called full employment is going to be placed pretty definitely on private business; and that international peace, in spite of clashing ideologies, is dependent, in the last analysis, on economic prosperity and a reasonable measure of business stability. For some indefinite time to come our backlog of postwar demand and unparalleled purchasing power will tend to obscure this basic problem, but thereafter, when this deferred demand has been taken care of, the answer to whether private enterprise can maintain full employment will depend upon the extent to which the American people can adjust themselves to what is, after all, a very different kind of a world, in most respects, from the world we used to know.

The world of today *is* a different world, and it is this fact that makes the paralleling between 1946 and 1919 dangerous. Somehow a lot of people who, in spite of experiences (both recent and not-so-recent) to the contrary, believe that planning in Washington will solve most of our problems, and even those who are unwilling to go quite this far are all too ready to turn to the Federal Government for a solution to their problems. The unemployed (including those who just don't want to work) must be taken care of, yet we still turn too often to the government to see that it is done. Labor is in the saddle to a degree we have never known before, though it does not always seem to realize that responsibility goes with power. Corporate property, instead of being owned by a few individuals, is actually owned by a larger number of persons than ever before.

The educational program authorized by the G. I. Bill of Rights is likely to have very far reaching consequences not conceived by those who are responsible for it, for the more than 14,000,000 men and women who have lived through a depression and then through the strained experiences of war, are not likely to be satisfied with outworn shibboleths. Basic and technical research have given us atomic power, radar, gas turbines, television, and the rocket. Indeed, many of us feel as though we are caught in the power of forces quite beyond our control, in the grip of which we are helpless and bewildered. It seems as though there is nothing we, as individuals, can do, even if we were fairly sure in very tangible terms of what our goal might be. In a measure, this is true. We are, each of us, to some degree in just that frame of mind. But before we give up entirely, let's look a little farther. Particularly, let us examine what business management generally, and procurement officers specifically, can do.

Pooled Judgment and Enterprise

If business management is to share in preventing this country from going into an economic tailspin, and to insure that what we call the American way of life is to survive, it will have to show itself possessed of a very high order of constructive vision. Merely riding the crest of the prosperity wave, damning the unions, or criticizing the government, will not be accepted as excuses when the break comes. There is just one way that reasonably full employment, economic stability, and world peace can be attained in that period when once the backlog of deferred demand has been taken care of, as sooner or later it will be. That way is to produce new and improved products, reasonably priced, that will meet the demands of consumers—consumers who are becoming increasingly sophisticated and increasingly "choosey." These goods must be produced at low cost, and they must be distributed efficiently.

And this problem is not going to be made any easier if, as I suspect, more manufacturers are going to find that the margin between production cost and selling price will be smaller in the postwar than in the prewar years. Yet, the first responsibility of businessmen in seeking to keep our economy dynamic and stable is to operate their businesses profitably, for surely this is a responsibility they owe "to their stockholders, their associates, their workers, and the public. Yes, and to their workers, too, for only a profitable business offers stability of employment."

Their responsibilities are clearly those of management. But though we may be willing to accept, at least in essence, the things I have said, there is still another query that must be raised. Just who or what do we mean when we talk about "management?" Is it the board of directors, president, or the general manager? Is management just a chosen few who traditionally have somewhat arbitrarily both decided on policy and directed the method for carrying it out? There are companies, and many of them, operated on that basis, and of course in the last analysis someone must assume final responsibility for decisions, but I am disposed to agree with Mr. William B. Given, Jr., the president of the American Brake Shoe Company: "Business management is entering upon a new chapter in its evolution; one narrowly dictatorial in character, it is becoming more and more broadly democratic. Practical experience has demonstrated that, save in abnormal cases of rare managerial genius, the pooled judgment, initiative, enterprise, and ideas of an organization produce a better end result in terms of progress and profits than does the autocratic administration of an individual. The growing trend toward physical decentralization of large industries is making successful centralized one-man administrative control all but impossible."

Procurement's Responsibility

In other words, especially from here on, "pooled judgment" is more likely to insure that business will meet its responsibility than is "autocratic administration by an individual." Now I take it, pooled judgment means the combined judgments of those persons particularly qualified to perform the essential basic functions of a business—the directors, chief engineers, production managers, sales managers—and the procurement officers. In short, the qualified procurement officer himself constitutes—or should constitute—part of that which we call management. True, he has always certain direct operational and administrative duties to perform. He

must know the tools of his trade. He must know sources of supply, good procedure, good record keeping, possess negotiating ability, maintain good buyer and seller relationships, and know all the rest of the techniques of his job as purchasing agent and procurement officer. All of these are absolutely essential to good purchasing operation. No man can do a good purchasing job without them, no matter what other qualities he may possess.

What Management Expects

But if purchasing men are to meet their responsibilities as procurement officers as laid down by advanced management, these things are not enough. If you will pardon me for making a personal reference, I have spent a year or more in trying to reorient my own thinking, procurementwise. In the process of doing so, I have tried to learn not merely what purchasing men think their relation to management ought to be, but also to learn the facts as to what chairmen of boards of directors, presidents, vice presidents, and general managers think the procurement men should be able to do. In doing so, I have not infrequently actually avoided seeing purchasing men because I wanted to get as clear a picture as I could of what other than purchasing men thought. The conclusions are not altogether startling, but they raise very definite issues.

For years now, those of us who have been primarily interested in purchasing have said that procurement is a major function and should be recognized as such by management. If this be true, by sheer force of logic, since procurement is a major function, then its director is part of management itself. Yet I am satisfied that for every procurement officer in this country who considers himself or his job as part of top management there are many, many more who consider basic procurement decisions as the responsibility of some superior group of which they themselves are not a part. I am afraid a good many of us talk purchasing on a policy scale and think purchasing wholly on a vocational, departmental scale.

For years now we have indulged in discussion as to how to get management to recognize procurement for its true worth. Perhaps one way would be to make procurement officers measure up to what management thinks they ought to be. Let me try to tell you some of the things advanced management expects of procurement.

In the first place, advanced management does consider procurement as a major function. The reasons are interesting, for they fall into two classes. First, it is assumed that the purchasing agent knows how to run his own internal department—to do the sort of things I referred to a moment ago as operational duties. The second class of reasons is interesting because, in spite of the great emphasis placed on them by management, none of them have much to do with what would be classified as within the narrow scope of practical purchasing procedure. Quite the contrary, the reasons why management considers procurement a major function —and, correlatively, the things its chief is expected to contribute — are:

Functional Research

(1) The procurement group is in an extremely strategic position because of its intimate relations with the engineering and production groups, on the one hand, and its close and continuing contacts with a large and diverse group of outside sources of supply, on the other hand, to make positive suggestions to other departments in its own company regarding new, improved, and substitute materials or possible improvements in design and specifications. And it should be expected neither to accept specifications and designs from coordinate departments without comment nor to submit those finally agreed upon to possible suppliers without inviting their suggestions.

In this connection, I cannot refrain from quoting from some remarks by Roland P. Soule, Vice President of American Machine and Foundry Company, as to the use and selection of materials:

"Research in the future is going to work more for the consumer and less for the producer. Recall that research to date has been pretty much in the hands of the big companies and that the big companies have been mostly the primary producers and refiners of materials of all sorts. The objective of such research has been to force a maximum of nickel, of aluminum, of copper, of gypsum, of asbestos, of plastics, etc., into as many different markets as possible. It is a technology of adaptation, and its success has been measured by the tonnage of materials sold by the companies financing that research.

"It does not require much imagination to realize, however, that only through coincidence would the products resulting from such research happen also to be the most suitable for the purpose in question. How many of you will admit, for example, that the best roofing, the best wallboard, and the best flooring that we can buy today are really the best that can be designed? Suppose for example, that a research department were not committed to use some one material in large part, but had complete freedom to select, in type or quantity, any material or materials that best fitted its purpose. Then, isn't it only reasonable to believe that the researchers could produce something representing a better compromise of cost and performance than the best now offered on the market today?

"It seems safe to predict, therefore, that in the future a smaller proportion of the country's total research effort will be upon adaptation —the forcing of a given material into a given market whether it has an inherent right to be there or not. There is reason to believe, on the other hand, that more attention will be paid to a new type of technology. Such technology takes the customer's point of view, and can best be described as functional engineering. Research of this type is most willingly financed by companies that own no mines or quarries, that have little or no stake in specific commodities, and hence can be more objective in their choice of materials.

"Functional engineering is almost always characterized by an increased emphasis upon the principle of composite construction. When it is practised more widely, we shall see many fewer products made largely of metal, wood, paper, textiles, plastics, or of any single material alone. We shall see, in their place, many more articles representing combinations of such materials, in which each material serves best its own particular function in a way that lowers the net cost of the final product at no sacrifice of quality. This increasing interest of the technologist in the consumer, and this growing recognition of the principles of functional engineering, spell real opportunities in research."

Strategic Contributions

Returning to the matter of what top management expects of procurement:

(2) Because of access to information regarding price trends, market conditions, and business outlook, which it is the particular need of the procurement group to develop, it

can make valuable contributions to the efficiency of the sales, financial, and other departments. Furthermore, such assistance should not only be available to such groups if and when called for, but should be proffered voluntarily whenever decisions affected by such factors are being made.

(3) Not only should the procurement group be aware of current and immediate product developments, but similarly it should be cognizant of the long-run trends in manufacturing processes and raw material production. What, for instance, is the future of various critical synthetic products compared with the natural product? What effect will the mechanization of cotton picking have on supply or quality of the American product? Are there possible shifts in the sources or quality of carpet wools? The answers to all such questions are of course highly problematical, and none of the changes contemplated is likely to affect operations for at least several years to come. But they can be most important factors in determining the long-run engineering, production, sales and procurement plans of the users of such materials, and thought should be given to them as far in advance as possible. The procurement group, because of its wide contacts and its knowledge of markets, should be in a particularly advantageous position to know of such trends and to evaluate their significance.

(4) The procurement group should be constantly on the alert to raise questions concerning the possibility of manufacturing in its own plant items now being bought outside, of buying outside items now being produced within the plant, and of contributing its full share toward reaching sound decisions on such issues.

These are four types of contributions which companies that recognize procurement as being what most of us have long said it should be are asking for. Note what this involves for the individual procurement officer. He must be qualified to meet these responsibilities and when he is, he is expected as a matter of course to participate directly in the formulation of final decisions at the top management level. This, of necessity, involves giving the procurement officer a place in the organization which permits direct participation in top management councils and which commands equal respect with other major executive positions. I am not talking theory now; I am reporting the facts as advanced management gave them to me.

Supporting Evidence

I want to add one additional bit of evidence to support my thesis that the aspects of procurement many have called academic because they relate to broad procurement policy are, in fact, equally important in management's mind with the so-called operating policies. An associate of mine, Professor J. Sterling Livingston, recently released as a Commander in the Navy of Supplies and Accounts, has just returned to Boston from a trip throughout the Middle West and Pacific Coast. In the course of that trip he called on some fifteen manufacturers in connection with certain procurement studies which we are conducting at Harvard Business School. When he returned to Boston, I said to him, "You talked to a good many top executives — presidents, and so forth, on this trip, as well as to purchasing agents. Tell me if there appeared to be any agreement among these top executives as to what they felt they should be able to expect of their procurement officers? I don't care what purchasing officers thought. I want to know what the others said."

He answered that in his judgment there were five things on which there was general agreement:

(1) Production planning cannot be most effective unless the procurement officer can actively contribute to the planning at the time it is actually being done.

(2) The procurement officer should continuously make positive contributions to production and technical process development. As a sample example, the improvement of the manufacturer's own end product may force the company to insist on definite lines of production development on the part of its suppliers and force the latter to make changes required by the former.

(3) The president should be able to count on the procurement officer more than any one person in his organization to maintain good working relationships between engineering, production, and sales.

(4) The procurement officer must be competent to participate in the determination of all major inventory policy decisions.

(5) There was a general feeling that, in view of possible (even probable) narrowing profit margins, the procurement officer must cooperate in all major merchandising decisions because of his influence on the cost-profit ratio.

You may or may not agree with these findings. In one sense, whether you do or not is beside the point. It is very evidently what top management expects of any procurement man if he is to carry his weight in the upper councils of his company and be accepted as a true representative of a major function.

Continued on page 224

Keenly attentive audience greeted the speakers at all of the conference sessions

A relationship that ought to be based on integrity and mutual confidence is complicated by legalistic safeguards inserted in intricate contract clauses

By Thomas D. Jolly
Vice President, Aluminum Company of America, Pittsburgh
Past President, N.A.P.A.
Chairman, N.A.P.A. Committee on Buyer and Seller Relationships

BUYER–SELLER RELATIONSHIPS

MARK TWAIN's famous remark about the weather applies equally well to the relationship between buyer and seller. There has always been a great deal of talk about it, but no one does much about it.

Although this relationship has existed since the earliest days of trade, it is an interesting fact that until comparatively recent years the buyer was generally conceded to be an innocent and gullible sort of individual. The seller, on the other hand, was represented as a glib-talking slicker who lacked morals and possessed the instincts of a pirate.

The first law governing market transactions was the Romans' "Let the Buyer Beware." Under the Roman laws, neither party to the contract was required to keep faith and those who desired assurance of the promise being kept had to exact an oath, a pledge, or personal sureties. Even then, however, the buyer needed to beware, since the courts seldom helped him enforce the contract. Today, performance bonds are still required under some contracts.

Only a little more than fifty years ago Nietzsche, in his "Maxims", said, "Merchant and pirate were for a long period one and the same person. Even today mercantile morality is really nothing but a refinement of piratical morality."

A search through all of the old literature would reveal no such criticism of the buyer. One explanation of this is that purchasing agents are of comparatively recent origin. Beginning with Elbert Hubbard's little gem, positions have altered to such an extent that we now find the buyer is a villain and the seller is the one who should beware. The special Committee on Purchase Orders — Patent Clauses, of the American Bar Association, in a report issued in 1944 said:

"It may be observed that, in general, in an industrial system of substantially free competition (in normal times) there are at any particular moment more offers to sell any particular article (or its equivalent) than there are offers to buy it. The essence of a competitive economy is the ability and willingness of producers to make more than can be sold of any particular commodity (or its equivalent). If that were not the case, there would be no free competition in that commodity (or its equivalent). (The existence of patented inventions does not materially alter the correctness of the above observation).

"Hence, in such an economic system the buyer has the advantage over the seller that he, the buyer, can bargain in the market for what he wants, and can impose terms upon the seller. That is unavoidable in such a system.

"Under this general situation there has grown up here in the United States the imposition of 'terms and conditions of sale' which the buyer, by virtue of his generally superior position, has forced upon the seller. A common practice is for the buyer to print said terms and conditions of sale upon the back of the order blank with notice thereof, upon the face of the order, thereby constituting the order an offer to purchase the specified goods upon the aforesaid terms and conditions of sale. If the seller supplies the goods on that order without alteration of the said terms and conditions of sale, he is bound by them.

"An examination has been made by your Committee of the order blanks of a number of representative companies, large and small, and engaged in different industries. This examination reveals an interesting situation. The buyer has in nearly every instance taken full advantage of his superior position in the proposed transaction and has generally required the seller to indemnify the buyer rather extensively against the various liabilities, expenses and losses contingent upon patent infringement. Generally, the seller is called upon to assume liabilities which are quite inequitable, having regard to the true relations of the parties and a fair analysis of the responsibility of each for loss arising from patent infringement in which both are concerned."

The 1945 Committee reported:

"Your committee agrees in general with the report of last year's committee on this subject (1944 Committee Reports, p. 62) to the effect that many patent protection clauses in purchasing contracts are not fair to both parties to the sale and that something should be done about it. Since last year's report gave a reasonably full statement of the present situation and how it came about, we will limit our report to explaining why we think something should be done and suggesting what we think should be done.

"Apparently some lawyers feel that because few suits are brought for breach of patent warranty clauses no one has been hurt by the present inequitable situation, and that this entire matter is a tempest in a teapot. Your committee does not share this view for several reasons.

"In the first place the absence of suits for breach of patent warranty clauses does not prove that no one has been hurt. Many of us know of cases where a seller

has paid out considerable sums in settling or defending a suit in accordance with his obligations under a patent warranty clause, which obligation he believes was unfairly saddled upon him. An imposing list of examples could doubtlessly be compiled.

"The mere fact that a particular client has never been affected is no reason we would fail to call his attention to the fact that his insurance policy is in bad shape. After the accident happens it is too late to point out that he should not have accepted such a broad liability.

"Furthermore, many small concerns have little direct contact with the Patent System, but practically all of them have had to accept patent protection clauses which they did not like, thus giving them a bad impression of the System. Probably the greatest assistant we patent lawyers can render to the Patent System is to emphasize the fair use of patents and patent clauses."

Because both of these reports were written by The Special Committee on Purchase Orders—Patent Clauses, neither mentions the multitude of protective clauses of other types that have been appearing on purchase contracts in increasing numbers every year.

Excessive Demands

It is unnecessary to quote examples of the complicated, confusing, and unfair "Hold Harmless" type of clause which attempts to cover every possible contingency. Numerous examples of such clauses can be found in the incoming-order files of every company and perhaps even on the back of our own firm's order form.

Not all of these, however, are liability clauses. Some are demands for special handling or extra services which are quite expensive to the seller although not included in the selling price. In most cases, this type of clause is thoughtlessly written in by the purchasing agent without considering the fairness of the demand or the trouble it will cause the supplier. To cite an example, the purchasing Agent of one of our best customers established a specification department which was to write specifications for all important supplies purchased. Included among these were aluminum alloy specifications which had been copied from our booklets. They gave our standard analysis and the guaranteed minimum physical properties and were, in fact, Alcoa specifications.

Our Sales Department was worried when the customer's purchase orders started to arrive bearing a clause which specified that each shipment must be accompanied by a certificate showing the exact chemical analysis and physical properties of the items included in the shipment.

Since all the orders were for standard production material, which is manufactured under close and careful control, it could not possibly pass inspection and be shipped to a customer unless it conformed in every way to the standard specifications. For us to supply a certificate for each shipment, however, would have taken extra attention and paper work. In fact, the additional expense necessary to meet this demand would have exceeded the profit on many shipments and added nothing to the value of the customer's material. The purchasing agent's excuse for this demand was that a specification is useless if not checked and that it would be extremely expensive for them to check each shipment.

Certificates Not Required

Although his words are true, it should be absolutely safe to accept the standard product of reputable suppliers on faith. If every supplier is required to furnish a certificate of specification on every shipment, costs will increase tremendously. In this case, the demand was dropped when we threatened to require a certificate for every bolt, nut and washer that we purchased from this customer. Although this is an unusual case, there are many other clause variations, some of which are not altogether clear in their meaning.

To protect themselves from purchase order clauses without being forced to employ a battery of lawers to analyze the conditions included with each offer to buy, some companies have adopted a policy of uniformly acknowledging each order with what is equivalent to a counter proposal, in which the order is accepted under their own "Standard Terms and Conditions of Sale."

When the purchase order contains clauses not included in the offer, it becomes a counter offer and the seller is bound to all the conditions if he supplies any of the goods covered by the order without having previously altered the terms of conditions. If the seller acknowledges receipt of the order subject to his own terms and conditions, supplies goods and has them received by the purchaser, the terms and conditions of the acknowledgment are binding.

A Mutual Problem

Fortunately, most business people, both sellers and buyers, are both honest and fair minded. Terms and conditions of purchase or sale are seldom the subject of lawsuits. They are, instead, something in the nature of a charm that wards off trouble which may develop because of some vague and untried law. But many constitute a hazard to the acceptor, are the cause of confusion and needless expense, and may result in lawsuits and strained relationships.

In general, a buyer is also a seller, and a seller is a buyer. The salesman who calls on a purchasing agent represents a customer, either actual or potential. While the purchasing agent may be a customer of the salesman, his company may also be a supplier of the salesman's company. If a seller can't sell, he can't

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Address at the Third Annual Conference, Purchasing Agents of the Southeast. Birmingham, October 11, 1946.

Off-the-record discussion: Tom Jolly, Professor Howard T. Lewis, Alabama Association President T. Hoyt Prater, and N.A.P.A. President George W. Aljian.

keep on buying. We know from present experience that manufacturing plants, distributing organizations, etc., cannot operate if they cannot buy. Because they are dependent upon each other for their business existence and since neither can stand alone, it seems strange that buyers and sellers cannot agree on a program for their common welfare.

There has been plenty of talk about the buyer-seller relationship, but very little action. N. A. P. A. "Principles and Standards of Purchasing Practice," adopted shortly after the Association was formed, laid down a code which, if followed, would make fair trade laws unnecessary. The National Association of Manufacturers established standards of practice closely paralleling those of N.A.P.A. In 1936, N.A.-P.A. and Rick Research Institute both published pamphlets which were aimed at correcting the growing tendency to add more and more "Hold Harmless" clauses and to shift the hazards of business from one side to the other.

Clarifying the Issue

The great difficulty has always been that the buyer blames the seller and the seller blames the buyer. Each believes the other should correct his practices. And the way business has see-sawed back and forth from sellers' to buyers' markets through priorities and allocations to the present muddled situation, has made it impossible to get together.

A few years ago we proposed a "General Purchase and Sales Agreement." This Agreement was to be about as follows:

GENERAL PURCHASE AND SALES AGREEMENT

Company "A" and Company "B" intending to be legally bound hereby, agree that

(a) All purchase orders hereafter issued to either party hereto by the other while this agreement is in effect shall be deemed to include the attached "Terms and Conditions." All other terms and conditions (whether printed, stamped, typewritten, written, or otherwise) contained in such orders, except provisions relating to the description, quantity, delivery schedules and price of the goods ordered, shipping instructions, and priority or allocation information shall be of no effect.

(b) Promptly after the receipt of any such order by either party, such party (1) shall acknowledge the receipt thereof and (2) if the other party is required to have signed acknowledgment copies of its purchase orders, upon written request of such other party, shall sign and return to it acknowledgment copies of its purchase orders bearing the following endorsement:

"This purchase order is subject to the provisions of the General Purchase and Sales Agreement between the buyer and the seller in effect on this date..... by.....date."

(c) Each such purchase order hereafter received by either party while this agreement is in effect shall be forwarded by it to its home office for acceptance or rejection. If a written notice of rejection of such order shall not be sent to the other party by the party receiving such order within ten (10) days ofter the date of its written acknowledgment of such order, such party shall be deemed to have accepted such order subject to the terms of this agreement.

(d) The attached "Terms and Conditions" shall be applicable to all such purchase orders accepted while this agreement is in effect, notwithstanding any other terms and conditions contained in any acknowledgment of such orders.

(e) The attached "Terms and Conditions" shall be applicable, not only to all orders accepted while this arrangement is in effect, but also to all current uncompleted orders heretofore issued by either party to the other. This agreement shall not be applicable to any purchase or sale by one party to the other pursuant to a written contract, other than a regular purchase order, signed by the respective parties and expressly applicable to such purchase or sale.

(f) None of the provisions of this agreement and none of the attached "Terms and Conditions" may be amended, modified or rescinded except by a writing signed by officers of the respective parties hereto expressly referring to this agreement.

(g) This agreement shall continue in effect until terminated as provided in this paragraph. Either party may terminate this agreement by notice in writing by the other, effective upon receipt of the other, but in such event, the attached "Terms and Conditions shall continue to be applicable to orders then uncompleted and orders accepted during the existence of this agreement. Any notice under this paragraph, if to Company 'A', shall be delivered, or mailed by registered mail, postage prepaid, and addressed to it at———————— attention; or, if to Company 'B', shall be delivered, or mailed by registered mail, postage prepaid, and addressed ————————attention; but either party may, by written notice to the other, change the address to which notice to it under this paragraph shall be so delivered or mailed.

(h) This agreement and all contracts made by the acceptance of purchase orders pursuant hereto shall be construed in accordance with the laws of the State of————————and be governed thereby.

A Fair Proposal

Two companies, each a customer of the other, should find nothing objectionable in this agreement. Agreement is defined as "harmony of opinion or mutual undertanding." Since this proposed agreement applies the same "Terms and Conditions" to both parties in all sales and purchases between the parties, it is mutual in understanding and should also be to their mutual benefit and profit. There should be no difficulty under such an agreement in arriving at "Terms and Conditions which are also mutually agreeable.

The objection has been raised that such an agreement would be signed by the sales managers of the two organizations and would, therefore, reduce the importance of the purchasing agents.

This does not appear to be a valid objection. Very few, if any, purchasing agents write the protective clauses printed on the purchase order; just as few, if any, sales managers write the clauses on the acceptance or order. Ordinarily, when a new law is passed, the purchasing agent asks the legal department if he needs protection and the lawyers, in turn, draw up a clause shifting all liability to the seller. Likewise, when the seller receives the order bearing a new and usually complicated clause which he does not understand, he refers it to his legal department, and his lawyers draw up a longer and more complicated clause to be printed on the acknowledgment, thus shifting responsibility back to the buyer.

Saves Time and Cost

This customary practice is time consuming, confusing and hazardous. Both sales and purchasing departments should be glad to free themselves from a constant bombardment of legal clauses. If both parties would get together with their lawyers and demand "Terms and Conditions" fair to both and in plain, understandable English, they can get just that; but if the lawyer is simply asked to protect his client, he must, to protect himself, include everything possible in order to shift liability, regardless of the rights of the other party.

The entire procedure adds considerably to the cost of doing business and is reflected in the price of goods sold. Especially in these days of rising costs and prices, everything possible should be done to eliminate useless expenditures.

Until business becomes somewhat more stabilized, it is not likely that a simple, standardized agreement will be accepted by all business organizations. That, however, is the aim of the N.A.P.A. Committee on Buyer and Seller Relationship. If enough purchasing agents believe in it and demand the same terms for both buying and selling, the accomplishment of this goal will be automatic.

George A. Renard

A buyer's-eye view of the economic problems that lie ahead for business

FROM ONE P. A. TO ANOTHER

• ***By George A. Renard***
Executive Secretary
National Association of Purchasing Agents
New York

PURCHASING has surely not slipped in importance in this postwar transition period if the plants are still operating, but in a great many other respects conditions are changing and have changed considerably at home and abroad. And that is what I want to discuss with you, because we have a very rapidly changing condition in a number of respects. A quick recapitulation of our situation runs like this:

When Uncle Sam ran low on meatballs, he began to get tough on the screwballs. In fact, we have developed a new and descriptive term, that is being used *"Snafucratic."* Of course you recognize that Army-Navy term *"Snafu"*—situation normal, all fouled up. Well when that's done by a Bureaucrat, it's labelled *"Snafucratic."*

And we find that it can happen to copper, linseed oil and pig iron, as well as meatballs. As you know, President Truman announced over the radio he was going to take all price controls off meat and was going to have practically all of our price controls removed by January 1st — most of them by November 1st. They say, of course, we will retain the control over rents. Sugar will probably be the only food item to remain under control, that we will probably retain price controls over some of our heavy durable goods—automobiles, farm equipment, some household furniture and appliances, on the basic textile and clothing items, and on building materials required for our low-cost veterans' housing program. In addition, I think we will maintain price controls on basic metals — copper, lead and zinc. There is no doubt but what price controls will remain on leather. As a matter of fact, they are trying to find a new formula on Decontrol, and the best formula they have found is to remove controls on all materials not produced to a value of $100,000,000 a year.

So you may say we are practically free of most Price Controls now, because once they announce freedom from any kind of control, nearly everyone starts operating pretty freely.

In Washington this week, Commodore Jack Small, who is the head of our Civilian Production Administration, made this statement: "If things go along no worse than they have the last three months, the next four or five months will see the end of Government controls over material." I would be inclined to doubt that statement as it would affect the building materials, because our Housing Administrator has authority under the law to issue his own Housing Controls and Allocations, and I doubt very much if he will relinquish that control. And then Jack added this statement, "Moreover—and I don't care what you hear, or think you know to the contrary — the same period should see the end of virtually all consumer goods shortages."

We have learned that strikes and labor troubles definitely limit and cut off production. We have learned that the hard way over the last year or so, not out of books; but we have learned that lesson. We have learned that increased wages do increase costs, and you can't get away from it, although some promoted the idea that it could be done. That is no longer a debatable theory, even in

Abstract of an address at the Third Annual Conference, Purchasing Agents of the Southeast, Birmingham, October 10, 1946.

our Office of Price Administration. We hear that is true in England, where they have a somewhat Socialistic form of government. It is even true in Russia where they have a Communistic government. The politicians of all countries are up against those facts when they face realities.

We know again that increased production, and that only, will permit shorter hours, higher wages, lower costs and lower prices. We know, and are perfectly willing to accept the fact, that high wages and good working and living conditions must be given as an incentive and reward for high production, but we must have the high production from labor.

Now I believe that freedom from controls may give us a pretty quick boom some time in the next several months, and a fairly sudden recession. Some people are talking about "a boom and a bust" coming within the next six to nine months. I think we will have the boom: we are riding the crest of a boom now, but I don't think we are going to have the bust. I think we will have a recession, and that recession, if we operate sensibly, will be short, and I think we will have very good business conditions for a number of years to come. That is my quick recap of the situation, as I see it at this time.

Peace — the First Objective

Regardless of whose stuff you read, or how hard you try to spell it out and add it up, you seem to reach the same conclusion: If we can somehow struggle through the complicated domestic and international problems that confront us, we certainly can't afford another war. Our debts, our material supplies, our competitive business and industrial system, will hardly stand another war, So I think we can all agree that our first objective must be peace. But we know that we can't get peace through surrender to, nor through appeasement of those who would destroy our way of living. So we must have peace which permits us—and others—to conduct our own affairs in our own way. And I believe we want that kind of peace so much, as we did in the last several years, that we would be willing to fight for it again.

Henry Wallace, one of our best known former statesmen, is to become an editor. He is to become editor of the "New Republic" the first of November. A great many of the Brain Trust boys think that is a mistake on Henry Wallace's part. Few editors have ever become President. The constant expression of one's opinion is fatal to one's political influence, and especially if Mr. Wallace goes on record. The alibi that some obscure economist or statistician gave him bad information about the subject won't stand up in editorial work as it did in Government.

Mr. Wallace only last week said, "Communism has no place in America. It will never cause us serious bother here until our free enterprise system fails to work effectively in providing jobs." Now, a great many people in the United States think we should not permit Communists to wreck our free competitive system so that it will fail to provide jobs. That's our real difference with Mr. Wallace, and it is breaking out all over the United States, and I think it is going to have a considerable effect in the next election.

Mr. Paul Hoffman, whom I respect very highly — he is Chairman of the Committee for Economic Development—says the principal cause for concern is the fact that so many business men accept recession as inevitable. Well, let's examine that, keeping in mind the comment of an ordinary farmer with no knowledge whatever of economics, who told one of our Congressional Committees out in Nebraska, that "a cow can't stay strong and healthy very long sucking her own milk for sustenance." I believe we have begun to realize that truth, and I believe it is all to the good.

Stock Market Barometer

As to business prospects, which are the important measure of purchasing problems ahead: we are having a great controversy over what the stock market has been saying. The controversy over the meaning of the stock market decline has even uncovered a new theory for measuring the trend.

The Dow Theory of stock market trends is based on what has happened. When stock market averages go through specific points, that proves we are in a bull or bear market. The sorry part of that measurement is it tells you what is happening after plenty has happened. In 1937 the Dow Theory signalled a bear market after stocks dropped 30 points. In September (last month) the Dow Theory signalled the crack-up was here—after the market had dropped 28 points in five or six weeks. That is not a very satisfactory signal.

So a new and seemingly practical yardstick has been offered, and it is based on the theory, and fact, that in the final stages of a bull market we have tremendous sales of new stocks; corporations are raising money to finance new and expanded business. The high prices of stocks cause private owners of companies to take some profits out of business by incorporating and selling, distributing part of their ownership to the public, through stock sales. That is always a feature of the top of the stock market boom. And whenever those new stock issues can be sold easily and profitably we are definitely in a bull market. But when these new issues get sticky, stick on the shelves of banks and investment houses, and can be distributed only at lower prices than originally set by the underwriting organizations, that is the signal to get out from under. Now about the middle of June that became noticeable in the United States. By the middle of July there were several flops in undigested securities. By August the regular stock market began slipping.

I hope you have followed me on that, for all this new Shields Theory does is reflect the operation of supply and demand. They claim that theory proved true in 1937, 1946 and 1929.

Does that prove the stock market influences business conditions ahead, or do business conditions ahead influence the stock market? Take your choice. But in purchasing you can't follow The Dow Theory and stop buying when the markets crack wide open. You know that when the demand for putty and pretzels falls off, inventories will pile up, and prices are likely to fall off. It's your job to watch Supply—Demand—Inventory—Prices, and act on the changes in supply and demand and inventory that will influence the price. That is Purchasing Economics if you want a high hat title for it. It is not all there is to purchasing by a long shot, but it is a fundamental on which the rest is built. You may use the stock market as a guide, but if it does forecast business conditions there must be something more fundamental than the stock market that forecasts them.

Personally I believe The Haney Business Measurements and Barometer Charts which we helped develop, and publish regularly, are the best guides available, because they chart maladjustments in commodity price and business trends, just as the Shields Theory attempts to forecast financial trends through maladjustments on the stock market. Those barometers are not flashing red signals yet—they show demand and prices are strong. But Haney

says this week, "We do have a business recession ahead of us." His barometers are beginning to show it. He says he does not think it will be very severe, if we move right. But watch that angle. The economists deal with averages. But the purchasing agent deals with specific commodities. Usually several items make up a large part of inventory and production needs. A dozen of them will cover maybe 60% or 70% of your inventory and your actual purchases.

Unbalanced Prices

Now it won't help you to have averages of prices high with the important items of inventory declining, and a decline in farm products may not reflect the situation in steel, copper, lead, lumber or paper.

Our economy, to be dynamic and keep rolling, must have three things —and it must have them together— the lack of any one of them spells trouble.

We must have *high national income,* and we must have *high employment,* and we must have with it, *high unit production and productivity* to support that high income and employment. We have those first two almost to an extreme, that high national income and employment. But we don't have the productivity. The latest Industrial Conference Board figures show manufacturing production lower in August 1946 than in December 1941, although employment and national income were much higher.

Now demand is not satisfied through lower production at higher prices. Demand fades into desires and wishes as prices advance. We still have tremendous demand and shortages, but we are reducing that demand from both ends — by production that satisfies it—by destroying it and turning it into desires that cannot be afforded because of prices.

We must adopt a course that permits representative business and industrial organizations to expand production and distribution, and that means permitting them to function normally, legitimately and profitably. We must allow the best elements of business to be the guiding influence in determining prices and expanding production, or the worst elements will take over, and I think we are making that decision—that we want the best elements to do so.

I talked to a housing expert in Washington. He said, "We have a lot of problems," I said, "What is the most serious?" He said, "Nails. The Government can't find nails to build homes for veterans." I said, "Have you surveyed the steel mills through the country to determine how much additional production you could get?" He said, "Yes, we know that." I said, "How much additional production can you get?" He said, "We are now producing 65,000 tons a month, and we know we can increase that production to 85,000 tons a month if the mills and labor will work with us." I said, "You can increase your production over 20%, and you have not done it?" "That is right," he said, "that is the position we are in." I said, "Why haven't you done it?" "Well," he said, "the mills want a price increase and are not interested in a subsidy from us on part of their production."

From all I hear of the nail situation, nails are probably produced at a loss, compared with other uses you can put steel into, and that is the determining factor in business. If you only have so much steel and you can put it into a product that makes more money, you are not going to put it into the lowest price product that you can make. You are going to put it into the product that pays you the best for the steel. If we take the price ceilings off steel that situation will completely change, I would say within two or three months nails will be comparatively easy, because we can have that increase of 20,000 tons per month.

We talk about the tremendous new capacity that we built up through the war. Few of us realize that is not peacetime production capacity. We increased production of steel to build ships; we did not increase production of sheets or strips, which is the great demand today.

Prices are certainly the most important factor right now in getting that production back into fair balance. Prices can encourage production, or they can stifle it. That is the real purpose of prices, and we surely don't want production stifled.

Back to Fundamentals

I think our Government now realizes that the essential business factors—costs and profits—are involved if we are to get production. Parity prices and take-home pay are just as important to business men as they are to farmers and labor. Fortunately for everybody, good practical political considerations and sound economic considerations are identical in the solution of this problem. As we get production and productivity, which Jack Small says we are going to get on all consumer goods, we can expect some decline in prices. We are finding it already in New York in small radios, which are already having their prices cut. The same thing is rapidly developing in two or three fields. So you can see how fast we get over that production

(*Continued on page* 320)

Eyes left! Banquet guests give close attention as the entertainers take over.

P. A. AID SOUGHT IN CONTRACT SIMPLIFICATION

Government procurement agencies invite suggestions from industrial purchasers on the practicability of their contract provisions and on possible improvements

• ***By A. N. Wecksler***

GOVERNMENT is exercising a degree of humility in its approach to buying. Purchasing forms are being overhauled to eliminate red tape, and to bring them into conformance with best current commercial practice. Suggestions from industry are being solicited — especially from PA's.

Part of the humility is due to the fact that Government purchasing no longer dominates the industrial market; indeed, Government is not the favored buyer of prewar days when the market was highly competitive, and all buyers were courted.

Another factor is the realization that protective clauses in a contract tend to build up the estimated cost of the contractor, who in turn seeks to protect himself against the contingencies of performance for which he will be held liable. This means that unreasonable requirements by the purchaser will build up the price structure — and ultimately he will pay the higher price.

To keep itself in the position of being an attractive customer for sellers, and to obtain best price offers, the Government is currently overhauling the Federal Standard Contracts. These were by-passed during the war by the various war agencies which used special contract forms — but use of the standard forms is mandatory on all Government departments and establishments, except where special authorizations are extended to use nonstandard forms.

JULIUS SILVERSTEIN
Chairman,
Federal Standard Contract Committee

Some of the contract forms have not been changed for the past 10 years; others are more up to date. The guiding precept in the present project is that practices common to industry constantly change, and such changes are more apt to take place during periods of upheaval. During the war, many suppliers were brought into the Government procurement picture for the first time, and they brought a new yardstick with which to measure Federal purchasing practices.

Suggestions Are Invited

To do the actual job of overhauling the standard contracts, a Federal Standard Contract Committee has been set up. Membership of the committee includes representatives of civilian, military and regulatory agencies of the Government. The regulatory agency representation includes the Government Accounting Office and the Justice Department, which means that the final contract forms will have the firm approval of the accounting and legal branches of the Government.

The committee chairman is Julius Silverstein, Office of the General Counsel, Treasury Department.

Any purchasing agent who would like to offer suggestions can obtain copies of the contract forms which are being revised, from any regional Government procurement office, or by requesting these forms from Mr. Silverstein. His address is Room 7070, Procurement Division Building, Treasury Department, Washington 25, D. C.

While all of the contract forms are being studied for possible revision, there are only five forms of general interest.

U. S. Standard Form No. 2 is used when the Government leases property as a tenant. This is a simple form, and although it has remained unchanged since 1935, no major changes are likely.

Standard Form No. 22 comprises the instructions to bidders on both construction and supplies. Purchasing agents may have some ideas on whether Government procedure governing bidders is reasonable. The purchasing agent may be in the position of providing a real service to industry if in his judgment this procedure can be simplified.

Penalties for Delay

Standard Form No. 23 is the contract for construction, and a good deal of controversy arises in consideration of this form. Procedures and requirements on specifications and drawings are a matter for thorough consideration.

The whole question of liquidation damages where the contractor has failed to perform is a highly speculative and interesting phase of this type of contract.

Under the currently used contract form, the contractor is penalized for delay in performance on the contract, provided "that the right of the contractor to proceed shall not be terminated or the contractor charged with liquidated damages because of any delays in the completion of the work due to unforeseeable causes beyond the control and without the fault and negligence of the contractor, including, but not restricted to, act of God, or of the public enemy, acts of the Government, acts of another contractor in the performance of a contract with the Government, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather, or delays of subcontractors due to such causes. . . ."

In the case of such unforeseeable circumstances, the contractor must notify the Government within 10 days of the cause of the delay.

One of the factors to be considered in reviewing this form is whether the 10-day period for notification is fair to the contractor. Another question is whether any of the contingencies can be foreseen. This latter question has been in the

courts, and the governing element has been held to be whether the contractor could have foreseen the delay.

A Supreme Court ruling on this question stated that:

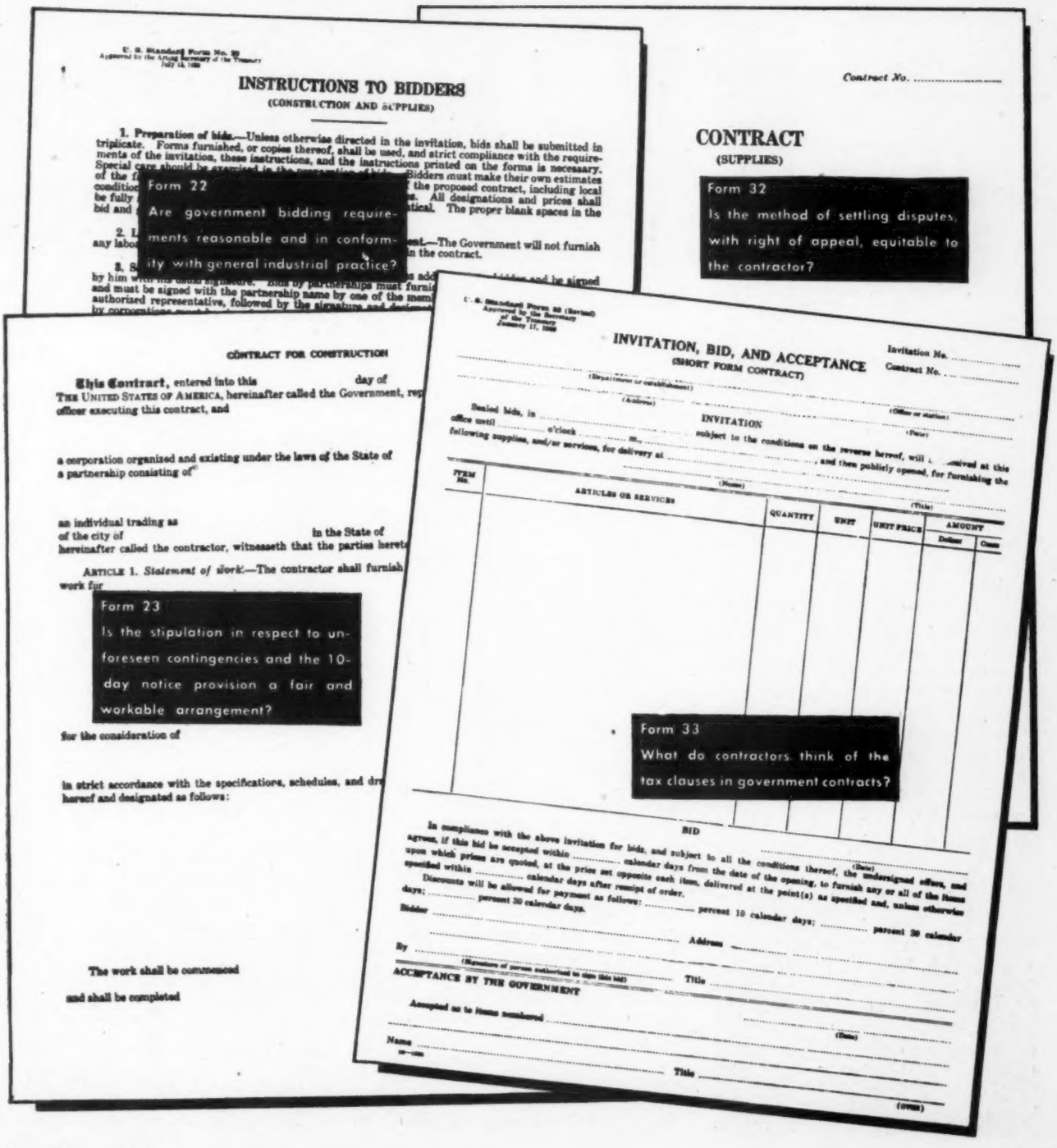
"* * * Not every fire or quarantine or strike or freight embargo should be an excuse for delay under the proviso. The contract might be one to excavate for a building in an area where a coal mine had been on fire for years, well known to everybody, including the contractor, and where a large element of the contract price was attributable to this known difficulty. A quarantine, or freight embargo, may have been in effect for many years as a permanent policy of the controlling government. A strike may be an old and chronic one whose settlement within an early period is not expected. In any of these situations there could be no possible reason why the contractor, who of course anticipated these obstacles in his estimate of time and cost, should have his time extended because of them."

Some clarification of the Government's contract terminology may be held necessary in the light of this decision.

The same question of foreseeable

• *Continued on page 324*

GOVERNMENT BUYERS WANT TO KNOW:


INSTRUCTIONS TO BIDDERS
(CONSTRUCTION AND SUPPLIES)
Form 22
Are government bidding requirements reasonable and in conformity with general industrial practice?
CONTRACT
(SUPPLIES)
Form 32
Is the method of settling disputes, with right of appeal, equitable to the contractor?
CONTRACT FOR CONSTRUCTION
Form 23
Is the stipulation in respect to unforeseen contingencies and the 10-day notice provision a fair and workable arrangement?
INVITATION, BID, AND ACCEPTANCE
(SHORT FORM CONTRACT)
Form 33
What do contractors think of the tax clauses in government contracts?

WHAT'S AHEAD IN FLAT ROLLED STEELS

Production losses have been serious this year; new capacity may come into production in 1947; backlog demand is unreliable; new applications in view

New steel making capacity must be supplemented by rolling mill capacity before it can meet the demand for sheets and strip. (Photo, Kaiser Company, Inc.)

• ***By Robert M. Nelson***

Marketing Service Department, The American Rolling Mill Company, Middletown, Ohio

SINCE the war, sales executives of the steel mills and distributors have been concerned with getting the maximum tonnage out of the mills and effecting an equitable distribution of the available supply. Far from being able to meet today's pent-up demands, this supply has been considerably less than we had to sell before the war. As an explanation of this condition, and as a practical indication of what we may expect in the immediate future, let us examine the capacity and production picture.

Production and Capacity

In 1941, the practical production capacity of the steel industry for sheets and strip (excluding black and tin plate) was approximately 16.2 million tons. It is also considered that the industry operated at its practical capacity in 1941.

During 1945, it is estimated that this practical operating capacity was at the same level (about 16 million tons), wartime additions in steelmaking capacity having been limited by the government to facilities for making heavy plates, forgings, and castings.

With capacity production in 1946, then, the most that could have been achieved was approximately the 1941 level of production, plus the small additions in capacity made since the latter part of 1945. Actually, however, the production has been much less than in 1941 due to causes with which most of us are familiar, such as the steel strike, the ore strikes, the coal strike, the railroad strike, the scrap shortage, other material shortages, and recurring labor troubles. Maintenance shutdowns have also reduced production abnormally. Sheet and strip rolling mills are five years older, and materials were not avaliable for adequate maintenance during or immediately after the war.

In the first seven months of 1946 (January through July) actual production amounted to approximately 7 million tons compared to practical operating capacity of about 9.5 million tons. Therefore, in the first seven months 2.5 million tons, or 29% of the possible production, was lost through labor troubles, maintenance shutdowns and material shortages. Figures just now available for August show production at 97% of capacity, but whether this rate will be maintained, or decreased depends to a large extent on factors outside the control of the steel industry.

There now exists a very serious scrap shortage which is affecting production. With most mills now operating on a hand-to-mouth basis as far as scrap is concerned, unless the scrap situation is improved, production will surely decline during the winter months.

As a result of the Great Lakes shipping strike, steel mills will go into the winter with inadequate stockpiles of iron ore. Coupled with the scrap shortage this condition is very likely to further cut production in the early months of 1947. There is considerable talk of another general steel strike which, if called, would again paralyze the industry.

Address before the National Association of Sheet Metal Distributors, Atlantic City, October 15, 1946.

Aside from a strike of major proportions, the industry has been continually plagued with localized strikes, with attendant labor unrest and lowered productivity.

We are hopeful that the so-called postwar adjustment period is about over, that our present production troubles will be solved and that the storm clouds on the horizon will disappear, thus enabling the giant of American Industry to attain full production and satisfy the needs of our country for steel products.

Generally, the industry is optimistic, for, in addition to bending every effort to achieve capacity production, it is now installing or has on order new facilities which will increase flat rolled steel capacity by 3 million tons, to a total of 19 million tons annual practical operating capacity. These new facilities, representing an increase of 19% over prewar capacity, are planned for completion in 1947. However, it is doubtful if all the increased tonnages can be gained before 1948.

Tonnages for 1947

With the above picture in mind, each of you is in as good a position as we are to forecast, or rather to guess, as to what tonnages will be produced in 1947. The most hopeful estimate would be somewhere in the neighborhood of nineteen million tons, roughly 19% above the 1941 production level.

Under these conditions, unless there is a sudden slackening of demand, it seems reasonable to assume that the allotment system of distributing flat rolled steel products will continue throughout the year 1947. The fair, equitable and profitable distribution of the available tonnage has been a most difficult problem for us all. We look forward eagerly to the return of normal competitive conditions when the sales ability of distributors will be the principal gage of the Industry's shipments through these channels.

Lowered worker productivity plus increased wage rates have acted both to decrease production and to increase manufacturing costs. A realization on the part of labor that increased productivity must accompany increased wages, and the return to normal pricing procedures, would enable the mills not only to get more total production but also to effect a different product mixture and wider distribution.

Government directives for overseas rehabilitation, for National Defense, and more recently for housing, have operated to redirect a portion of the production into other than normal channels.

Demand

Speaking of the return of "normal competitive conditions", let us examine for a moment the factors making up the present demand picture.

First, we entered 1946 with a five year backlog of commercial and industrial maintenance, plus a considerable amount of reconversion work. The physical reconversion of production equipment was speedily accomplished and much building maintenance has been done. However, there's a considerable backlog remaining and a large amount of commercial and industrial building has been temporarily postponed.

Second, during the war, manufacturers carefully made their postwar plans, including production and market estimates. In the early days of reconversion it was a modest manufacturer who estimated an increase of only 50% over his 1941 production for 1946. Many plants were keyed to operate at 100 to 150% over their 1941 rate. Now, however, projected manufacturing programs are more realistic and it appears that a 15% to 20% increase will suffice to take up the slack.

Third, at war's end, manufacturers' stockpiles of materials and seminished goods were extremely low. Also the pipeline from manufacturer to consumer was empty.

Department of Commerce statistics have shown a steady rise in inventories in 1946, and a sharp rise of 800 million dollars in July to an all time high of 18 billion dollars. The July rise was coincident with a slight drop in shipments and a decrease in the volume of new orders. in the opinion of some economists, the widespread publication of these figures was an important cause of the stock market break. August figures just now available show another rise in inventories of 325 million dollars although shipments jumped more than a billion dollars.

Steel Inventories

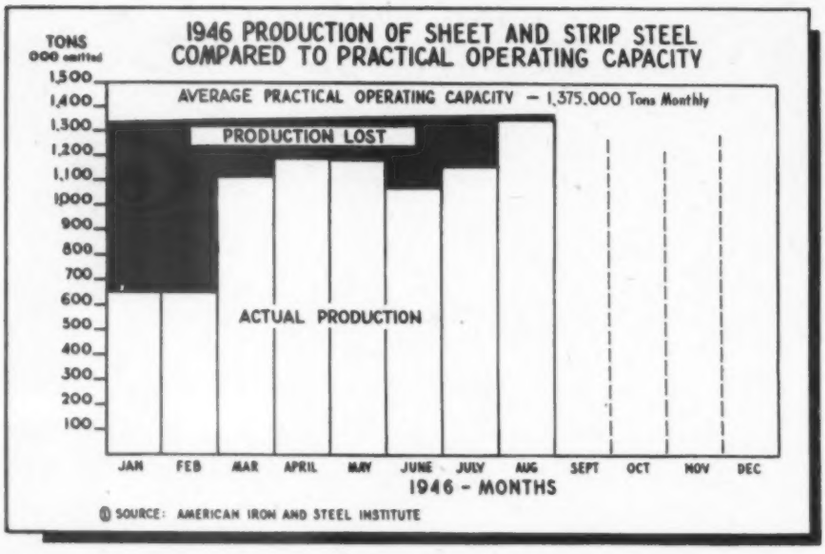
There are two angles to the inventory picture that may decrease the effective demand for steel. On the other hand, there is definite evidence in some consumer durable goods items, notable radios and small appliances, that the supply lines are filling up. In the case of major appliances and automobiles, steel is not the limiting factor in many cases. Some buyers are giving more study to inventory control and balance based on what production of finished items can be achieved. In other words, why continue to pile up steel and semifinished parts when a shortage of lead, copper, or motors prevents complete assembly. Ironically, the shortage of castor oil (for brake fluid) is seriously limiting new car output.

We also entered the postwar period with a five year backlog of demand for home maintenance and consumer durable goods, supported by wartime savings. Recent surveys of appliance dealers have shown that a considerable portion of their "orders" evaporate when confronted with actual delivery, and that the backlog of solid orders is much smaller than the first over-optimistic estimates.

Undoubtedly, in many cases the purchasing power supporting durable goods demand has been dissipated through strikes and the purchase of other types of goods. Certainly the sharp rise in prices has acted to decrease the market for many consumer durable goods items.

For example, due to increased manufacturing costs, notably influenced by lowered productivity of labor, automobile prices are today 66% above the 1940 level. Even with increased earnings it is reasonable to believe that the market for a small car is considerable less today at $1500 than it was for the same car at $900 six years ago. This condition also applies to homes, radios, washing machines and many other manufactured items. As long as a scarcity exists, the effect of these

ROBERT M. NELSON



increased prices on the market is not seen, as the "must have" buyers and the "spendthrift" buyers take what is available. But when this cream is skimmed off and the "it would be nice to have" buyers and the "judicious" buyers are reached, the effect will be quickly felt.

These and other business signposts indicate that the present conditions of short supply may disappear sooner than generally expected, and that with increased production the time may not be far distant when the demand and supply curves will again meet. At that time all of us charged with the distribution of sheet steel and steel products will be confronted with the necessity for constructive and vigorous merchandising.

Return of Competition

If recent articles in the daily press are correct, there exists considerable concern and perhaps fear in some minds at the thought of a return of a buyer's market. Now, there's no reason for this, as the buyer's market is the normal condition. It brings out the true spirit of competitive enterprise. The only reason a fighter should fear the ring would be that he is flabby and out of condition due to inactivity.

A recent magazine survey suggests that business generally is not prepared citing such figures as:

1. Two thirds of the firms surveyed confess their selling strength is 25% less than prewar.
2. Loss in sales punch is estimated as high as 60%.
3. Salesmen on the average are five years older.

Can organizations in this condition sell a volume of 25% to 50% above prewar, in a normal competitive market?

Unless we are badly mistaken, the time is again coming when merchandise of all kinds will need to be:

Of good quality
Competitively priced
Adequately stocked
Widely advertised
Competently sold, and
Promptly delivered.

What can distributors do now to make ready for this situation? Here are a few suggestions:

Build and re-train your sales force

Improve your warehouse and service facilities

Properly balance your lines of merchandise

Better organize your sales territories

Re-study the requirements of your customers and prospects, and then

Get in shape to better serve them.

New Developments

Many distributors can go beyond their own organization and "spread the gospel of preparedness" to their manufacturing customers and retailing customers. Much will depend on how well they in turn are prepared to meet competition. Spur them on to product development, proper pricing, adequate stocking, competent selling and improved customer service.

From the research laboratories of the steel industry you will have new and improved steels to sell, and several specialty steel products, introduced just prior to the war, will have many new applications. For example there are:

Zinc coated sheets that can be formed and drawn without rupture of the coating.

Galvanized sheets specially treated to take and hold paint.

Flat rolled steel in coils for better warehousing and use in continuous manufacturing processes.

Alloy and stainless steel in sheets, strip, bars and wire for a multitude of new uses.

Noteworthy Installations

Stainless steel is rapidly widening its list of industries and applications served. Public acceptance of stainless steel is sufficient today to give every product made of it a decided sales boost. Of special interest is the increasing use of stainless steel in architecture. In this field two noteworthy installations of national interest are now being planned: the Time and Life Building in New York, and the General Motors Technical Center, Detroit. Stainless steel is being considered for the exterior and interior wall covering. A new and revolutionary design utilizes steel truss construction, curtain walls or "skin" of stainless steel sheets, with light weight insulation filling the wall spaces. No heavy stone or masonry is to be used above the foundation. It is estimated that in the new Time and Life Building, the additional office space gained through the use of this construction will produce $30,000 monthly in rents. Stainless steel is also planned for window frames, building hardware, outside doors, elevators, lobby and ornamental iron work.

Other Opportunities

These two large jobs are the forerunners of thousands of smaller ones which it will be our opportunity to sell. Many remodeling projects and new store fronts will use stainless. Stainless steel roof drainage installations made 10 years ago have recently been inspected and found to be in perfect condition. More and more sheet metal shops are finding they can fabricate and sell stainless for the better more profitable jobs. These are but a few highlights of new developments that will hold great promise for those sheet metal distributors who are properly equipped, competently staffed and alert to new marketing opportunities.

Pages From a Buyer's Notebook

BACK TO FUNDAMENTALS

The head of a big purchasing department, several of whose buyers were recruited during the war years and had to acquire their experience and knowledge of buying on the job, got the shock of his life recently when he discovered in the course of a casual conversation that one of these buyers had no idea what the symbol "f.o.b." meant. For three years this man had assumed that the term merely referred to the vendor's plant location, and he had written nearly two million dollars' worth of purchase orders on that basis.

Pursuing his investigation further, the purchasing agent discovered that this was not an isolated case. There were no less than seven men in his department in the same state of blissful ignorance on the subject. Some of them were issuing purchase orders, and some were checking vendors' invoices.

This purchasing executive has long had in mind the desirability of introducing an informal training course in his department, to be started when he got around to it and as time became less of a problem. He had gone so far as to jot down a few notes on courtesy to salesmen, escalator clauses, reading the business barometers, and the like.

The course has been started in a hurry, but the curriculum doesn't follow the original pattern. It's on company time, taking precedence over departmental routine for one hour every Monday afternoon. It deals with the ABC of buying. The first lesson was on "f.o.b."

MAKER OR DISTRIBUTOR?

In weighing the relative merits of buying direct from the manufacturer or through a local distributing house, there are a lot of factors to be considered. One of them is of a particularly timely nature and may not have received the attention it deserves.

Delivery schedules are perhaps the most important, as well as the most troublesome, problem of the purchasing agent in today's market. Part of the trouble is that whenever you place an order with the manufacturer, it goes on to the tail end of his production schedule, which may be several months away. No amount of expediting can change that situation, and the buyer is obliged to wait.

But consider the distributor. He usually has a monthly allotment of the manufacturer's output. It may not be as big as he would wish, but it's regular and dependable. With every turn of the production cycle, he gets his share. These goods are not part of a hypothetical backlog; they are tangible goods that are getting into distribution and use, and they go to the jobber's customers.

That's a good point to remember. It puts new meaning into the sometimes vague concept of distributors' "service".

PURCHASING vs. PROCUREMENT

There's a tendency in some quarters today to substitute the term "procurement" for the time-honored and possibly inadequate word "purchasing." It's getting fashionable to refer to a purchase as "a procurement". I wonder whether this is necessary, and whether it even makes sense.

Proponents of the new terminology claim that procurement is a broader term, including the act of purchasing plus the inference of actual delivery. Of course that's why purchase orders are issued; they are no good to the company until the delivery is effected. Every P. A. knows that.

But unfortunately, everyone doesn't use the word in that sense. A recent trade paper article stated that the purchasing department of a certain company did the buying, but procurement was a responsibility of the production department. Upon further investigation of this confusing statement, it developed that in this particular company (Philco) procurement means nothing more nor less than expediting. With that information, the picture became clearer.

Everyone knows what purchasing means. Procurement, the 50-cent word, is still at the stage where it means pretty much anything you want it to mean. Until a better argument for its use is developed, and some one definition is generally accepted, it ought to be filed away in the pigeonhole with the late and unlamented word "purchasOr".

FINE PRINT CLAUSES

A purchasing agent friend of mine has found the perfect method of dealing with the fine print evil that still persists on some of the forms vendors expect us to sign—and occasionally on the backs of purchase orders, too. The other day he was confronted with a particularly horrible example—twenty numbered paragraphs, in type so microscopic as to be scarcely legible at best, and printed in a faint gray ink.

"Why have you chosen this impossibly difficult way of presenting such an important part of the agreement?" he asked.

"They are just the standard terms and conditions,", he was assured. "We have to use small type to keep them within a reasonable space, and the gray ink is an advantage because it doesn't show through on the face of the order."

"On the contrary," said the P.A., "I believe they are printed that way so that I will not read them, and that is a fact. My eyesight isn't what it used to be, anyway. Yet you will agree that obviously I cannot sign what I haven't read. Suppose you pull up a chair and read them to me."

The hapless salesman had to comply. For twenty minutes he stumbled through the obscure script while the buyer listened, gravely attentive. Several times he paused to rest his strained eyes, and twisted the sheet to get a better light. At the end he confessed to a violent migraine headache. My friend now has a staunch ally in the adversary's camp, trying to have the condition corrected.

HOW HEUBLEIN BUYS

● **By Jack L. Hall**
Purchasing Agent, G. F. Heublein & Bro., Inc., Hartford, Conn.

HERE is a simple but efficient system of Purchasing Department forms used by G. F. Heublein & Bro., Inc., of Hartford, Conn., involving a minimum amount of forms and necessitating a minimum amount of paper work. The forms used consist of the following:

1. Purchase Requisition
2. Purchase Order
3. Price Record and Vendor Card
4. Inventory Record Card

The Purchasing Department consists of the Purchasing Agent, an Assistant Purchasing Agent and one secretary-stenographer who takes care of necessary clerical work on purchase orders as well as office dictation, typing of orders, filing, etc.

The system starts with a purchase requisition which is made out by the department ordering the material, equipment or supplies. The quantity desired, the description or specifications and the date needed are all filled in by the department ordering. All other information on the requisition is completed by the Purchasing Department. The requisition is in duplicate with one-time pencil carbon, the original orange and the duplicate blue. The duplicate copy stays with the department ordering for their own records. The requisitions are furnished the various departments in covered pads of 50 sets each.

When the requisition is turned in to the Purchasing Department, it is checked and the name of the vendor, price, delivery instructions and other necessary information inserted. It then goes to the typist for the typing of a regular purchase order. The purchase order is a six part form; the first copy (white) is mailed to the vendor; the second copy (blue) is a working copy for the Purchasing Department and is immediately filed in an open order alphabetical file; the third copy (red) goes to the Accounting Department for record, distribution of cost, and other information; the fourth copy (yellow) goes to the department ordering to be used as a Receiving Report when the material is received; the fifth copy (tan) goes to the receiving clerk so that he may have knowledge of what material is coming in and may distribute incoming material or supplies to the proper department; the sixth copy (green) is the follow-up copy and goes into a date file.

Follow-up Postcard

A follow-up inquiry postcard is sent to the vendor usually about 10 days after an order is placed if the order has not been acknowledged or unless delivery has been requested at a later specified date, in which case the green copy of the order is filed under the proper date for follow-up.

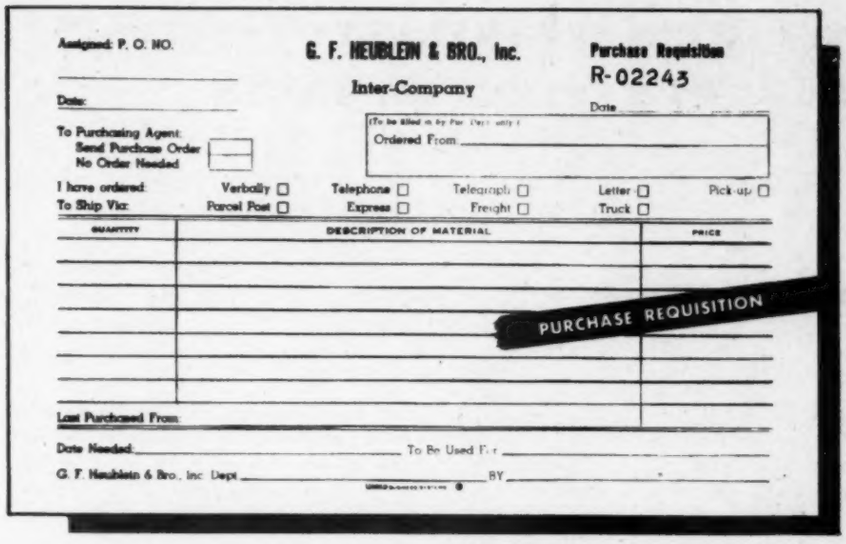
At the time the original purchase order is typed and before mailing to vendor, it is entered on the price record and vendor card, which is filed alphabetically by commodity and gives a full record of past purchases as well as the current order including the quantity ordered, date, date received, order number, sources of supply, prices paid, terms, etc.

All incoming invoices are checked by the Purchasing Department for quantity and price and noted on the Purchasing Department's working copy of the order, on the price and vendor card, approved for payment, and forwarded to the Accounting Department for arithmetical checking, distribution and payment.

Upon receipt of the receiving report (yellow copy), the working order is marked "completed" together with the date, and transferred by the clerk from the open order file to the completed file, which is also an alphabetical file kept by years. Partial receipts of material are reported to the Purchasing Department on a partial receiving report. All receiving reports then go to the Accounting Department for checking and matching with their copy of the order, after which they are filed numerically, as completed.

The final step by the Purchasing Department in its paper work is inventory control. A Kardex system is used. Invoices are posted to the inventory card and deductions made therefrom as the material is used and reported to the Purchasing Department. Only labelling and bottling materials such as bottles, cartons, caps, labels, etc., which are used in extremely large quantities, are inventoried by the Purchasing Department. All other inventoried material is taken care of by the Accounting Department.

The Purchasing Department of G. F. Heublein & Bro., Inc., with three employees, regularly purchases over 500 different items, including all operating supplies and materials and equipment for two plants, one of which manufactures food specialties among which is "A.1 Sauce", and the other liquor specialties including "Heublein's The Club Cocktails", "Milshire Gin" and other products all nationally famous since 1875.


Assigned P. O. NO.

Date:

To Purchasing Agent:
Send Purchase Order
No Order Needed

I have ordered: Verbally ☐ Telephone ☐ Telegraph ☐ Letter ☐ Pick-up ☐
To Ship Via: Parcel Post ☐ Express ☐ Freight ☐ Truck ☐

G. F. HEUBLEIN & BRO., Inc.
Inter-Company

Purchase Requisition
R-02243

Date

(To be filled in by Pur. Dept. only)
Ordered From:

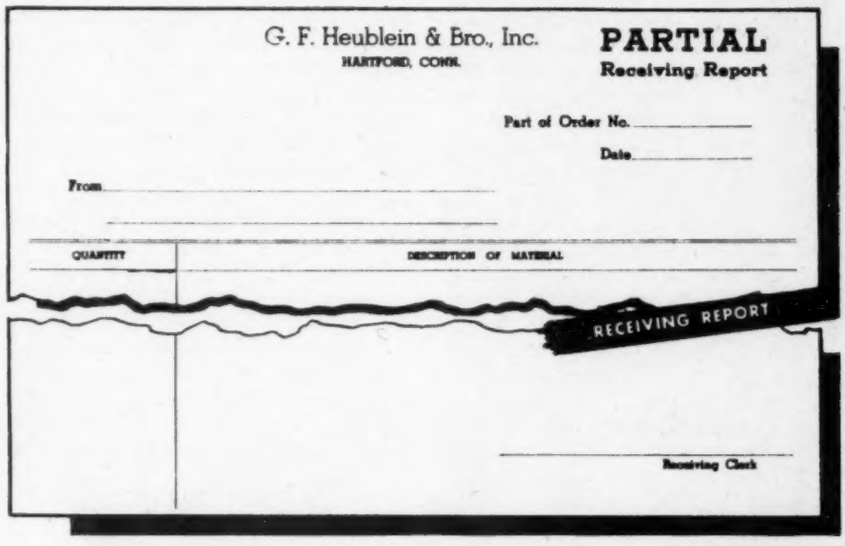
QUANTITY	DESCRIPTION OF MATERIAL	PRICE

PURCHASE REQUISITION

Last Purchased From:

Date Needed: To Be Used For

G. F. Heublein & Bro., Inc. Dept BY


G. F. Heublein & Bro., Inc.
HARTFORD, CONN.

PARTIAL
Receiving Report

Part of Order No.

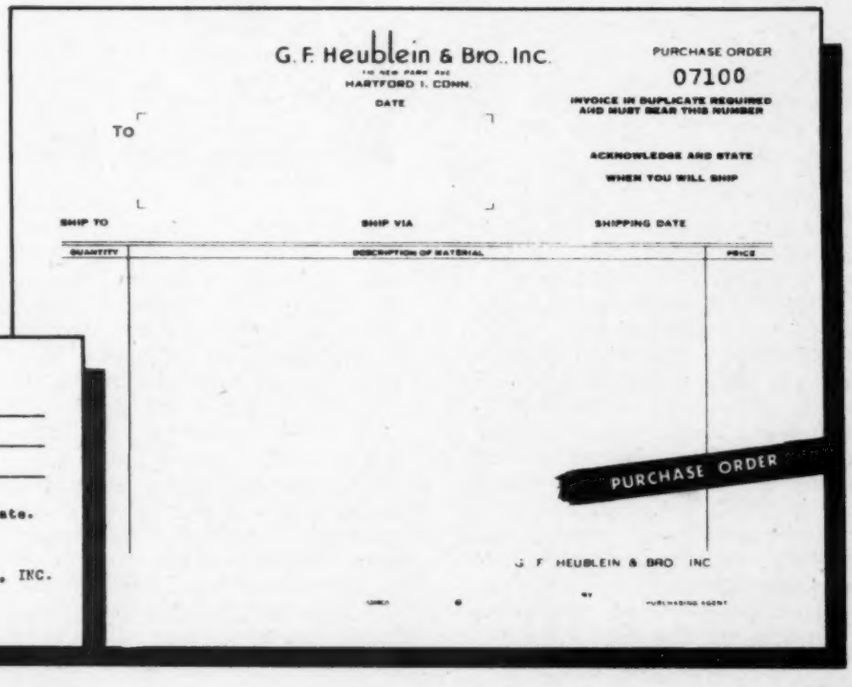
Date

From

QUANTITY	DESCRIPTION OF MATERIAL

RECEIVING REPORT

Receiving Clerk


G. F. Heublein & Bro., Inc.
HARTFORD 1, CONN.

DATE

PURCHASE ORDER
07100

INVOICE IN DUPLICATE REQUIRED AND MUST BEAR THIS NUMBER

TO

ACKNOWLEDGE AND STATE WHEN YOU WILL SHIP

SHIP TO SHIP VIA SHIPPING DATE

QUANTITY	DESCRIPTION OF MATERIAL	PRICE

PURCHASE ORDER

G. F. HEUBLEIN & BRO. INC

BY

PURCHASING AGENT

FOLLOW-UP FOR DELIVERY

Gentlemen:

Please refer to our Purchase Order _____

for _____

to be shipped _____

We are in early need of this item.
Please advise earliest possible shipping date.

Very truly yours,

G. F. HEUBLEIN & BRO., INC.

Purchasing Dept. Hartford, 1, Conn.

SELLER'S LIABILITY FOR PUNITIVE DAMAGES

Purchaser can recover only the amount of actual damages unless he can prove that the element of fraud is involved

By Leo T. Parker ●

CONTRARY to the opinion of a majority of purchasers, a seller may be liable for $5,033 damages, although the actual damage sustained by the purchaser is only $33. In other instances sellers have been held liable for more than $10,000 damages when the purchaser suffered as low as $25 actual damages.

These extraordinary damages are "punitive" or "exemplary", and are allowable where the circumstances are such that the court believes an "example" should be made of a seller who practiced fraud, malice, deceit, or the like, on the purchaser. Thus "tort" must be connected with the transaction before the seller can be held liable for "exemplary" damages.

It is an old and established principle of law in suits to recover damages for "tort", which always involve the ingredients of fraud, malice, or insult, the jury may go far beyond the rule of mere compensation of the purchaser, and award exemplary or punitive damages. This rule of law was distinctly recognized in early decisions. As far back as 1859, Brinkerhoff, Chief Justice, stated that this rule was considered established and elementary in jurisprudence. Brinkerhoff said further that in cases of this kind a jury acting under oath is not likely to do any great wrong, and that the power which this rule confers upon a jury may, in practice, operate as "a salutary restraint upon the evil passions of bad men."

Punitive damages also are recoverable in many cases where the seller's conduct shows a wanton or reckless disregard of the legal rights of the purchaser.

In some jurisdictions the theory is that exemplary damages are awarded by way of compensation, though they incidentally operate by way of punishment, but in other states punitive damages are allowed as a punishment to the offender, and as an example to deter others from offending in a like manner.

Therefore, exemplary damages not only compensate the purchaser for actual loss, but punish the seller, and as an example to deter other sellers from committing the like offense. Such damages are given as "smart" money in the way of pecuniary punishment. The allowance of such damages rests not upon the ground of abstract or theoretical justice, but upon the ground of public policy, a policy which seeks to promote the public safety, to punish through the medium of a civil proceeding a fraudulent, malicious, insulting, or willful wrongdoer, and to hold him up as a warning example to others, to deter them from offending in a like manner.

Origin of Law

According to some legal authorities the practice of allowing exemplary damages had its origin in cases

involving elements of recovery incapable of pecuniary estimate, and hence peculiarly within the discretion of the jury. Another theory advanced has been that the doctrine had its origin and foundation in a failure of estimated time and to recognize items of recovery for which compensation should have been allowed.

Whichever theory may be correct, the right of a jury in certain cases to award exemplary damages has been said to be as old as the right of trial by jury itself, and, while objections have been advanced, the doctrine is now one of general acceptation.

As a general rule exemplary damages are not recoverable in suits for the ordinary breach of contracts, irrespective of the motive on the part of seller which prompted the breach. In other words, no more can be recovered as damages than will fully compensate the purchaser.

On the other hand, where the acts of a seller constituting a breach of contract also amount to a cause of action in tort, there may be a recovery of exemplary damages. As sometimes stated, exemplary damages are recoverable for a tort committed *in connection with* the breach of contract, where the essentials of an award of such damages concern the tort and not the breach of contract itself. In order to permit a recovery, however, the breach must be attended by some *intentional* wrong, insult, abuse, or gross negligence which amounts to an independent tort.

Deceit Is Punitive

By no means does every legal wrong entitle the purchaser to recover exemplary damages.

For example, modern higher courts consistently hold that any person may sue and recover damages based on deceit. Therefore, a buyer who has been induced by the fraud of the seller to purchase merchandise may ordinarily maintain a suit in the nature of deceit to recover damages resulting from the fraud. But, as above explained, a suit based on deceit to recover damages for fraud inducing the making of a contract by a purchaser is *not* based on the contract but on the tort. Moreover, full completion of the contract by the seller does shield the latter or preclude recovery of damages for the fraud.

Acts of Employees

Considerable discussion has arisen from time to time over the legal question: When is a seller liable for exemplary or punitive damages resulting from deceit or fraud of his salesman, or representative? The

answer to this question is: An employer may be held liable for exemplary damages where the act complained of by the purchaser was authorized or subsequently adopted by the employer, or where the employer participated in and ratified the wrongful act of the salesman or representative.

For example, in the case of Saber v. Green Jewelry Company, 60 N. E. (2d) 224, reported July, 1946, the testimony showed facts, as follows: A man named Saber purchased thoroughly worthless reconditioned merchandise believing that it was new. Saber sued the seller, or employer, for $33, the price paid for the merchandise, plus $5,000 exemplary damages.

During the trial Saber testified that the seller's representative had stated that the merchandise was new. However, the salesman denied that he so stated. But Saber proved that the seller consistently advertised that he sold only "quality" merchandise. The jury refused to allow Saber $5,000 exemplary damages, but the Supreme Court reversed its verdict and held that the jury should have decided from the testimony that the seller was guilty of deceit, fraud and malice, because he knew or should have known that his representative had practised fraud. Thus, in this case, although the jury decided that the seller could not recover $5,000 punitive or exemplary damages, the Supreme Court reversed the decision. This court quoted law, as follows:

"The fact that an employer retains an employee, after knowledge of the latter's willful and malicious

conduct, tends to prove ratification of the employee's act sufficient to support a verdict against the employer for exemplary damages. . . . The record shows that the manager who sold the watch was retained thereafter in the employment of defendant (employer)."

Therefore, it is quite apparent that the courts apparently take the view that the subsequent retention or promotion of the employee guilty of the wrong is legal ratification by the employer of the deceitful or fraudulent acts previously committed by the employee.

On the other hand, many courts have held that if the employer discharged the employee on learning of his fraudulent act this testimony proves disapproval of the employee's conduct and relieves the employer from liability for exemplary damages.

Knowledge of Seller

Another important point of law is that a seller never is liable for torts of his salesman who acts without authorization or knowledge of the seller.

In the case of Tracy v. Athens & Pomeroy, 152 N. E. 641, it was said:

"A principal, therefore, though of course liable to make compensation for injuries done by his agent within the scope of his employment, cannot be held liable for exemplary or punitive damages merely by reason of wanton, oppressive, or malicious intent *on the part of the agent.* In other words, where that which is tantamount to punitive or exemplary damages is to be recovered by reason of the willful character of the wrongful act, proof of this knowledge and willfulness on the part of the party producing the wrong must be made. The employer cannot be punished for the personal guilt of his servant or agent, unless the employer authorized, ratified, or participated in the wrongdoing."

Must Prove Tort

Modern higher courts consistently hold that no purchaser may recover punitive or exemplary damages from a seller unless he proves that the seller is guilty of tort. At least the purchaser must introduce testimony which proves, through circumstantial evidence, that the seller committed tort.

For example, Judge Robinson said at page 146, 136 N. E.:

"While the facts in this case might well have justified in pleading charging a tort, we are unable from the petition itself to reach any other conclusion than that the gravamen of the complaint is the breach of the contract. . . ."

Therefore, if a purchaser merely proves that a seller breached a contract he can recover only *actual* damages sustained as a result of the breach. In other words, where a purchaser merely proves that a seller breached a contract, there are no circumstances under which the court will hold the seller liable for punitive or exemplary damages. The element of deceit, fraud, malice, or similar unlawful influence must have entered into inducing the purchaser to make the contract.

According to the law, in the various states, when there is a breach of warranty by the seller, the buyer may, at his election—(a) Accept or keep the goods and set up, against the seller, the breach of warranty by way of recoupment in diminution or extinction of the price; (b) Accept or keep the goods and file a suit against the seller for damages for the breach of warranty; (c) Refuse to accept the goods and maintain a suit against the seller for damages for the breach of warranty; (d) Rescind the contract and refuse to receive the goods, or if the goods have already been received, return them or offer to return them to the seller and recover the purchase price.

Also, modern higher courts consistently hold that after the merchandise has been delivered to the buyer, he cannot rescind the sale if he knew of the breach of warranty *when he accepted the goods,* or if he failed to notify the seller within a reasonable time of his election to rescind, or if he failed to return or to offer to return the goods to the seller in substantially as good condition as they were in at the time the merchandise was accepted by the purchaser.

Obviously, if deterioration of goods is due to the breach of warranty, such deterioration will not prevent the buyer from returning or offering to return the goods to the seller and rescinding the sale contract.

Quite naturally, neither a buyer nor seller may sue and recover more than actual damages, under these circumstances, for the other's breach of the contract, unless tort, as willful or malicious conduct, is conclusively proved.

Another important point of law is that if a buyer legally accepts a

shipment of merchandise which, through mere error of the seller, does not conform with the terms of the contract the purchaser can only sue and recover actual damages sustained.

It is important to know that legal acceptance of merchandise by a purchaser is (1) acceptance of a shipment without making a complaint of its price, quality or quantity within a reasonable time after the shipment arrives; (2) acceptance of a shipment, with prompt and justifiable complaint, and afterward being negligent in safeguarding the goods whereby a portion or all of the merchandise is lost, disfigured or damaged; (3) acceptance of a shipment, with prompt and justifiable complaint, and subsequent use or sale of a portion or all of the goods; (4) acceptance of any portion of a shipment of unsatisfactory merchandise is legal acceptance of the complete shipment.

Prompt Inspection

The law requires a buyer to inspect merchandise within a reasonable time after it was delivered under a contract of sale. If there are any *apparent* defects, and the purchaser retains the shipment an unreasonable period without complaint, he cannot refuse payment.

If, however, the defects in the merchandise are not apparent or readily discoverable, the purchaser is not deemed to have legally accepted the merchandise until sufficient time has expired in which other reasonable and prudent purchasers of the same kind of merchandise have discovered such defects. But if a purchaser fails to inform a seller of intended uses of merchandise, there can be no breach of the seller because such a sale is "as is" and responsibility for satisfactory merchandise shifts to the purchaser.

See Standard Company v. Warren Company, 159 N. E. 508, where a salesman accepted a verbal order for merchandise from a buyer. The salesman's employer immediately "accepted" the contract and shipped a portion of the merchandise. Later the buyer acknowledged that the merchandise was satisfactory. Subsequently when another shipment was received by the purchaser he claimed that the merchandise was defective for the reason that it was not adaptable to be used in an automatic machine.

Since the purchaser had not notified the seller that he intended to use the merchandise in an automatic machine the higher court held the purchaser bound to pay for the merchandise.

Therefore, in order that merchandise shall be "legally" defective, it must be shown that the purchaser either purchased the merchandise under definite specifications, or notified the manufacturer regarding the intended use of such merchandise. A purchaser who buys specifically described merchandise assumes full responsibility, particularly if the seller made no false statements before the contract was signed. But if such statements were intentionally fraudulent, malicious, or insulting the seller may have performed a legal "tort" and, therefore, is not only required to refund the contract price to the purchaser, but also account to him for punitive or exemplary damages many times more than actual damages sustained by the purchaser.

Guarantee Liability

As clearly held by the higher court in the above explained case of Saber v. Green Jewelry Company, 60 N. E. (2d) for punitive or exemplary damages amounting to more than one-hundred times the purchase price of the merchandise, if either the seller or his representative intentionally falsely guaranteed the merchandise. This rule of law is applicable, as a general rule, exclusively to expressed guarantees. Guarantees are classified as "expressed" and "implied". Where the buyer and seller have orally or in writing agreed to the exact terms of the warranty, it is an expressed guarantee. However, an implied guarantee exists where the seller does not intend to make a warranty, but the circumstances are such that the court will imply a warranty, irrespective of the contrary contentions or denials of the seller.

In other words, frequently the circumstances and the intended uses of purchased merchandise are such that a purchaser is compelled to rely upon the honesty of the seller to supply merchandise reasonably fit for these intended purposes known by the seller.

In all such controversies the purchaser may win the suit if he proves to the satisfaction of the court that the subject of the sale failed to render the same degree of efficient service, as may have been expected and demanded by other prudent and reasonable purchasers of the same class of merchandise. See Universal, 140 S. E. 653.

For other higher court cases involving punitive and exemplary damages, see: Gibson, 198 S. W. 412; Melead, 221 S. W. 961; Mitten, 85 N. Y. Supp. 883; Trout, 130 S. W. 136; Hunt, 60 So. 530; Jones, 280 Pac. 942; Larrend, 44 S. E. 520; Ryder, 102 So. 428; and Memphis, 163 S. W. 1153.

Hot Water Pipe System For Snow Removal

Snow removal system consisting of hot water pipes embedded in concrete pavement has been installed at plant of American Cyanamid Co., at Bridgeville, Pa., in 600 ft. long two-lane roadway. The roadway is 24 ft. wide, constructed of 8-inch concrete slab. Embedded in the concrete at the bottom of the slab are eight lines of black wrought iron pipe which provide two pipe lines 18 inches apart between each wheel track in both lanes.

Hot water at an average temperature of 165° will be circulated through the pipes at the rate of 50 gpm against a head of 17 ft. The water is to be heated by steam from the plant's boilers in a converter used especially for the snow melting system. Sufficient anti-freeze solution will be added to the system to prevent freezing during periods of non-operation, thus obviating possible damage to the pipes.

Under maximum operating conditions the system is expected to accomplish the removal of a minimum of one inch of snow or ⅛th inch of ice per hour. It is calculated that snowfalls in excess of this rate are unusual and it is not considered practical to design such melting systems for greater capacity. The pipe runs, it is estimated, will provide snow-free, ice-free wheel tracks about two or three feet in width. Residual water will be quickly evaporated from the warm surface by natural air currents.

Are You Wrestling with Manufacturing Problems? You Can Get *More* Products per Ton—*Better* Products per Ton—with N-A-X HIGH-TENSILE Steel

Manufacturing experience proves it true: N-A-X HIGH-TENSILE steel enables the average user of hot- and cold-rolled sheets to increase production of units 33% *without* increasing steel consumption.*

With this low-alloy, high-tensile steel, less metal is required for each unit. Sections are thinner, yet have *equal* strength and *greater* durability. This saving may well make it possible for you to produce four parts where you normally produce three.

N-A-X HIGH-TENSILE steel can be drawn and formed to intricate shapes. It has excellent weldability, high fatigue- and corrosion-resistance and great impact toughness. These superior qualities bring you not only a better product—but also important economies in handling, fabricating and finishing.

MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N-A-X
HIGH-TENSILE STEEL

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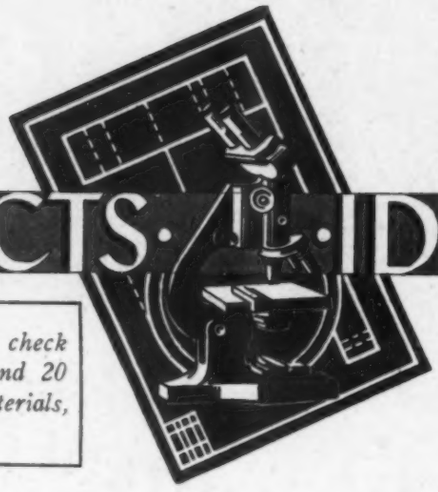
GREAT LAKES STEEL CORP.

The full extent to which N-A-X HIGH-TENSILE can increase and improve your production depends, of course, on your own particular products and methods. Our metallurgists and engineers will be glad to help you investigate fully.

GREAT LAKES STEEL
Corporation
N-A-X ALLOY DIVISION • DETROIT 18, MICHIGAN
UNIT OF NATIONAL STEEL CORPORATION

New PRODUCTS · IDEAS



Purchasing Agents and their Assistants are invited to check the pre-paid "Ask Purch" postcards on Pages 19 and 20 for late catalogs and bulletins on New Products, Materials, Finishes, Equipment, etc.

CENTER DRILLING MACHINE

HIGH production center drilling machine with automatic centering and clamping designed to handle a wide range of shapes and sizes, and drill concentric centers in stock ranging from ⅛ to 2⅜ inches outside diameter, is announced by Detroit Tap & Tool Company, 8432 Butler Ave., Detroit, 11, Michigan. Self-centering vise automatically clamps the work in concentric alignment with the centering drill. Drill head is of cartridge type with precision ball bearing ways. Drill has three speeds, 1540, 2400 and 5200 rpm.

METAL SCREENING & FILTER CLOTH

LEKTROMESH metal screening and filter cloth is announced by The C. O. Jelliff Mfg. Corp., Southport, Conn. It is a one-piece solid metal product which cannot ravel. It is extremely resistant to tearing. Hole diameters are extremely accurate. It is stiff, strong and wear-resistant and readily fabricated by drawing, stamping, welding, soldering and other operations. Mesh patterns can be produced in various metals. Meshes vary from 40 to 400.

PRESSURE GAGES

STREAMLINED pressure gage with non-breakable crystal and easy-to-read dial, of the Bourdon approved type, is announced by the Dayton Rogers Manufacturing Co., 2835 12th Ave. S., Minneapolis 7, Minn. Movement is so constructed as to obsorb all shocks from severe uses, and maker states it cannot corrode from steam, water, air, etc. Gage is suitable for use with any liquid or gas.

REMOVES PARTICLES FROM PLANT GASES

SOLID or liquid particles from plant discharge gases may be removed by the Koppers-Elex Electrostatic Precipitator announced by the Koppers Company, Inc., Koppers Building, Pittsburgh, 19, Pa. The precipitators are designed for maximum removal or recovery of boiler fly ash, tar, acid mists, soda ash, fluorides, catalysts, dust and other nuisances or valuable byproducts, and are engineered specifically to the needs of individual plants.

SOUND-SLIDE FILM EQUIPMENT

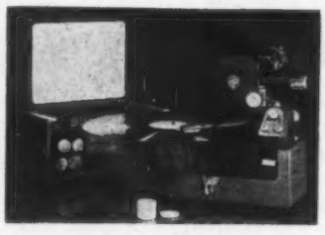


ILLUSTRATION shows the Explainette "100" model sound-slide film unit announced by Operadio Manufacturing Co., St. Charles, Ill. This unit is designed to meet demands for audio-visual aids in sales training, point-of-sale selling, employee training and visual education. Unit is compact and portable and designed and engineered for small and medium-sized audiences.

ELECTRODE DEPOSIT 400 TO 500 BRINELL

RESISTWEAR is name of hard-surfacing rod announced by American Manganese Steel Div., Chicago Heights, Ill. It is a high carbon, chrome, molybdenum shielded electrode that can be deposited on any ferrous base metal. Deposit hardness is said to be approximately 400 to 500 Brinell. Resistwear is available in coated form only for a-c and d-c application in ⅛", 5/32", 3/16" and ¼" diameters, 14 inches long. Bulletin W-20-B describes Resistwear in detail.

METAL CLEANING TANK

NEW automatic motorized washing and dipping metal cleaning and rust-proofing tank in sizes from 60 to 300 gal. capacity is announced by D. C. Cooper Co., 1467 South Michigan Ave., Chicago, 5, Ill. Known as Cooper's Automatic Motorized tank it is designed for automatic washing and cleaning of metal parts, giving continuous agitations. Hand dipping is eliminated. Tank can be supplied for cold dipping, hot cleaning or dipping and can be heated by electricity, gas or steam. Can be used for wax dipping and rust-proofing operations.

FLEXIBLE-CORRUGATED PRINTING SERVICE

PRACTICALLY any overall design, as well as trademarks and slogans, can be printed in one color on flexible corrugated by equipment installed by Sherman Paper Products Corp., Newton Upper Falls, Mass. In addition to its advantages as a low cost advertising medium, printing on flexible corrugated packaging provides protection against substitute products.

TUBE CUTTING, FLARING MACHINE

ELECTRIC tube cutting and flaring machine is announced by C. J. Unger Manufacturing Co., Dayton, Ohio. It is designed to cut, flare and trim copper or aluminum tubing in one operation. Capacity, 5000 flares in eight hours. Any length of tubing can be handled. Removable jaws for various sizes of tubing are available. Motor, ⅓ hp.

(*Continued on page* 150)

Real Cost vs. Dollar Cost

This book gives the answers ... when it comes to FLOOR TREATMENTS ...

It's not what you pay per gallon for floor finishing material that counts. The *real* cost is the satisfaction and service you get per dollar spent. To help you prove to yourself that Continental "18" looks better, stays clean longer, and outwears any floor treatment you now use ... *yet costs no more* ... Continental Car-Na-Var offers you a *guaranteed* plan for buying floor treatments.

Under this plan you test Continental "18" on your own floors, in your own way, for any reasonable length of time. YOUR judgment as to results is final. To protect you, Continental Car-Na-Var guarantees *in writing* that cost of the new materials will not exceed your usual cost for the same period. Savings in manpower due to fewer applications are an *extra* benefit for you.

Try Continental "18"... made only of finest materials and proven cheapest in the long run in thousands of schools, hospitals, office and public buildings all over America. For full information concerning the Guaranteed Cost Equalization Plan, write for FREE booklet, *today!*

Lasts longer...

CONTINENTAL "18"

TRADE MARK REG. U.S. PAT. OFF.

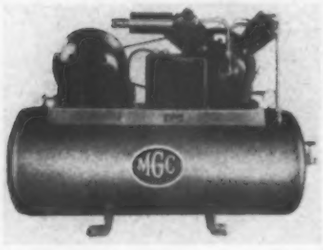
THE SUPER FLOOR FINISH

it costs no more!

Product of **CONTINENTAL CAR-NA-VAR CORP.**
1653 E. National Ave., Brazil, Ind.
▲ *SPECIALISTS IN HEAVY DUTY FLOOR TREATMENTS*

(*Continued from page* 148)

AIR COMPRESSORS



FIVE new models of Super-Duty Two-Stage Air compressors, available in 7, 9, 13, and 21 cubic foot capacity, with 80 gal. storage tanks or optional 60 gal. tank with 7 cubic ft. unit, are announced by Motor Generator Corp., division of Hobart Bros. Co., Troy, Ohio. Compressors are self contained type with motor and compressor mounted steel base welded to 80 gal. horizontal air receiver. They are fully automatic and controlled by centrifugal type unloading valves which guarantee against motor burn-out.

18-FOOT REACH FORK TRUCK

FORK-type power industrial truck with an elevating reach of 18 ft. above floor level is announced by the Elwell-Parker Co., 4205 St. Clair Ave., Cleveland, Ohio. It is especially useful for high tiering materials. Capacity is rated at 4000 lbs. for lifting to a height of 11 ft., and 3000 lbs. to 18 ft. It is electrically driven, with three separate motors; one for traveling, one for operating the elevating mechanism, and the third for tilting the upright column. Tilting limit is 15 degrees backward and 5 degrees forward from vertical. Lifting speed with capacity load is 13 ft. per minute. Truck is mounted on 4 wheels.

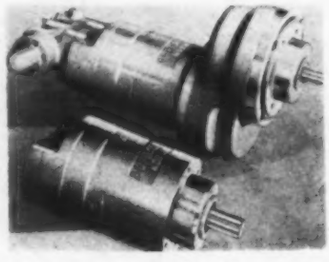
THREADING WORK HOLDER

ILLUSTRATION shows the Mosley full-floating holder which is designed to take the "guess" out of threading operations. It is a hardened and ground precision tool of quality steel adaptable to drill presses as well as most types of hand operated screw machines. Maker states that it operates on all types of material from the toughest steel to hard rubber, permits faster spindle speeds, reduces labor and material costs, and is a guarantee of greater production of high quality work. It is made by the Mosley Manufacturing & Sales Co., Syracuse 3, N. Y.

NEUTRALENE GAS PRODUCING EQUIPMENT

HEAT treating without decarburization with the new Neutralene gas producer is announced by Industrial Heating Division of General Electric Co., Schenectady, N. Y. Neutralene gas atmosphere is especially suitable for bright annealing, clean hardening, and furnace brazing of medium- and high-carbon steels, hardening of high-speed steels, and sintering of high-carbon ferrous metals. Basic unit of this new equipment is a complete and portable assembly, mounted on a single base and interconnected with piping and wiring. Neutralene saves about 18 kw hours per thousand cubic feet of gas produced, or over $1000 per 6000-hour year with a power rate of one cent per kw hr. The equipment lends itself to adaption as a "central" atmosphere gas producing plant to supply gas to multiple furnaces, making for uniformity and lower costs.

VERSATILE FLUID MOTOR

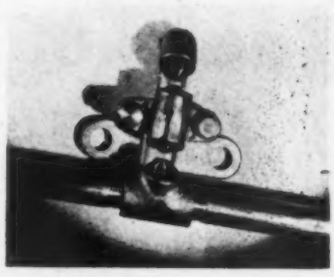


NEW Fluid Motor of axial piston design in 3 hp and 5 hp capacity, with or without speed control valve, with or without choice of gear-head units of various gear ratios; and with selection of brackets for mounting in any position desired, is announced by the Denison Engineering Co., Columbus 16, Ohio. Motor is featured by "Floating Drive" wherein constant pressure contact is maintained without use of mechanical linkages or connecting rods. It is self starting; operates efficiently in either directions; can be instantaneously reversed, and is self-lubricating. When equipped with speed control valve, motor can be preset to operate at any speed within its capacity.

PICKLING WASHING METAL PARTS

NEW spray-type machine for continuous pickling and washing of metal parts requiring surface preparation for application of enamel or other coatage or removal of scale is announced by B. F. Goodrich Company. Each unit is designed individually to suit the particular manufacturing problem, and is lined with rubber. Maker states straight line operation is obtained and production can be standardized. Pickling time for one operation is reduced to four minutes from 15 minutes required in dip process. Confinement of acid and acid fumes in the chamber provides greater safety. Simplicity of operation reduces labor costs; no complex conveyors are involved.

ADDED FIRE PROTECTION

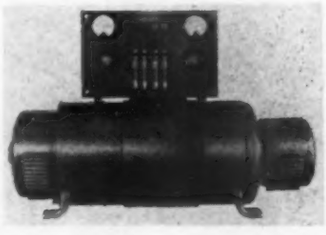


SCREENING nozzles designed to cut off or "screen" a fire's oxygen supply, for use with standard carbon dioxide fire extinguishing systems are announced by Walter Kidde & Co., Inc., Belleville, N. J. The nozzles throw a curtain of carbon dioxide across openings. They usually operate in conjuction with a built-in extinguishing system using the same high pressure gas supply and piping. They not only "screen" a fire's oxygen supply, but also tend to stop fire from spreading to nearby areas.

CORROSITE AIR-DRYING PLASTIC COATING

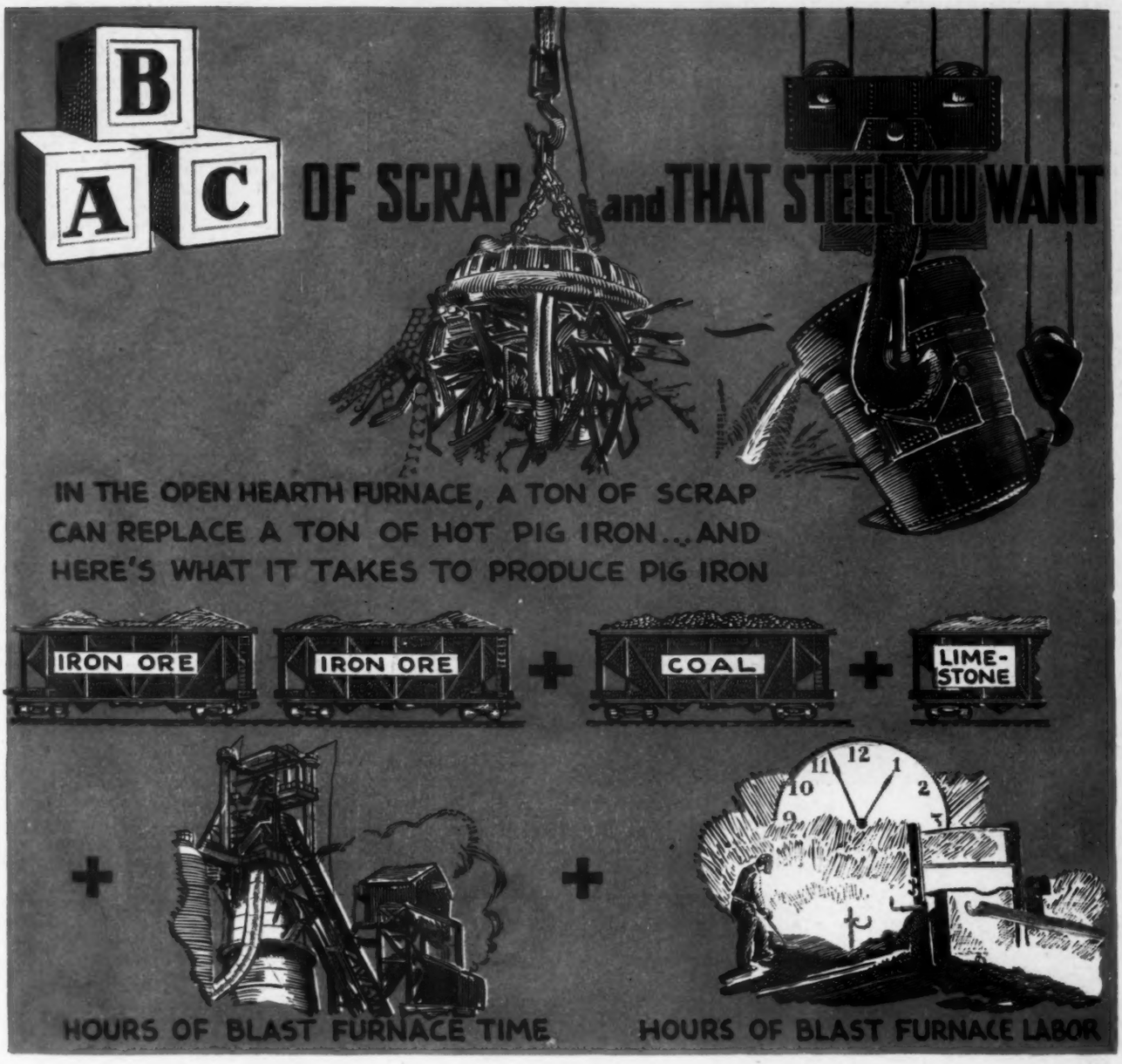
AIR-drying plastic film named Corrosite, completely resistant to most acids, all alkalis, and many chemicals, is announced by Baker Synthetics, Inc., 51 E. 42nd St., New York. It is recommended for uses involving abrasives, corrosion or weathering, such as bridges, ships, factory floors, the chemical and metallurgical industries, etc. Maker says it will bond to practically any clean surface, and that it is electrolytically impervious. Smoothness is said to compare favorably with porcelain. Will not crack or chip and will withstand temperature up to 250° F. It is available in black, clear, aluminum and gray.

ELECTROPLATING GENERATOR



LINE of low voltage electroplating generators is announced by Motor Generator Corp., Troy, Ohio. It includes 6 models ranging in size from 100 amps at 6 v to 2000 amps at 6 volts, or 1000 amps at 12 volts. Illustration shows 130 Model which is rated 1000 amps at 6 volts or 500 amps at 12 volts. Generator is driven by a 10 hp motor at 1200 rpm. Standard tank size normally used with this model is 6′ x 30″ x 30″, or a tank containing 250 gallons of solution.

(*Continued on page* 152)


B
A C
OF SCRAP and THAT STEEL YOU WANT
IN THE OPEN HEARTH FURNACE, A TON OF SCRAP
CAN REPLACE A TON OF HOT PIG IRON... AND
HERE'S WHAT IT TAKES TO PRODUCE PIG IRON
IRON ORE
IRON ORE
COAL
LIME-
STONE
HOURS OF BLAST FURNACE TIME
HOURS OF BLAST FURNACE LABOR

TO you "scrap" may be just worn-out machinery, broken pipe and such junk---worth nothing to your business.

But it IS worth a lot to your business delivered to the steel producer. Scrap may be the means of supplying you with more of the new steel and steel products you want.

As every buyer knows, steel is produced by "blending" hot pig iron and scrap in the open hearth furnace. Each ton of available scrap can replace a ton of pig iron. The greater the shortage of scrap, the heavier the drain on pig iron supply to produce a given tonnage of steel.

But every extra ton of pig iron produced calls for the use of approximately two extra tons of iron ore, one extra ton of coal and one extra half-ton of limestone, processed in a blast furnace, involving many extra hours of time and labor. It is obvious that there is a limit to America's blast furnace capacity. So the quickest, most effective way to produce maximum steel tonnage now is to find and use more scrap.

Help yourself to more steel by starting more scrap into the channels that serve the mills.

YOUNGSTOWN

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES - YOUNGSTOWN 1, OHIO

Export Offices - 500 Fifth Avenue, New York City

Manufacturers of

CARBON - ALLOY AND YOLOY STEELS

Pipe and Tubular Products - Sheets - Plates - Conduit - Bars - Electrolytic Tin Plate - Coke Tin Plate - Rods - Wire - Cold Drawn Carbon Steel Rounds - Tie Plates and Spikes.

Speed Burring Jobs with OILSTONE FILES

Grinding Wheel Grit ... and ALL File!

Whether it be the skillful stoning of the countless teeth in these giant reduction gears or single stroke passes on thousands of small machined parts—burring is a production operation.

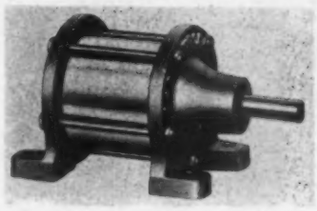
India Oilstone files, by Norton Abrasives, speed burring jobs—with a corresponding cut in production cost—for two reasons. They are made of aluminum oxide, grinding wheel abrasive, and they're all file—not just rows of cut teeth. They cut hardened steels as well as untreated, and permit easier control of stock removal.

Factory oil-filled for greater chip clearance, India Oilstone files offer Industry a complete size and shape range of over a hundred standard stock items with a finish spread including coarse, medium and fine grits. Ask your distributor or write for booklet, "Oilstone Files."

Photo courtesy of Westinghouse Electric Corp.

BEHR-MANNING · TROY, N. Y.
(DIVISION OF NORTON COMPANY)
ALSO QUALITY COATED ABRASIVES SINCE 1872

AIR CONTROL CYLINDER

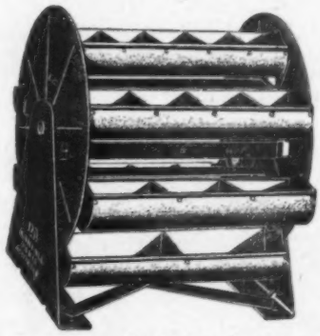


NEW line of air cylinders designed to expedite material holding operations for drilling, reaming, tapping, milling, grinding, injection, and ejection, is announced by Air-Trol, 2651 West Lake Street, Chicago, 12, Ill. Sizes range from 1½" up with a power factor from 1.76 times air line pressure. Air Control Cylinders are designed for single or multiple (production line) setups.

QUICK ACTING PAINT REMOVER

QUICK-acting solvent for removing tough coats of old paint, varnish, enamel, shellac and lacquer, known as Bull Dog Remover, is announced by Gillespie Varnish Co., Dey St., Jersey City 6, N. J. It is supplied in liquid and cream form and can be used on upright surfaces as well as flat surfaces. Maker states it will stay moist and deep cutting as long as 24 hours, reducing hard finish coats to a quickly yielding sludge. It is free from acid and alkali reactions and is non-corrosive; will not raise wood grain; will not damage fibre or injure user or brush used to apply it. Liquid is recommended for furniture, Bakelite varnishes, clear varnishes, synthetic clear finishes and all flat surfaces. Cream is recommended for all vertical surfaces, boats and marine work, etc.

SMALL PARTS ASSORTER



NEW Kari-All Parts Assorter, consisting of a number of compartmented trays set in a ferris wheel arrangement, is announced by Diagraph-Bradley Industries, Division of Diagraph-Bradley Stencil Machine Corp., St. Louis, Missouri. Assorter comes in two sizes, the Jumbo, 18" long handling about 65 different small parts, and the Standard, 12" long, handling over 30 parts. Bins can be adjusted for part sizes. Assorter can be fastened in an upright position from a side wall or from ceiling. Assorters are made of steel.

(*Turn to page* 154)

FOR TODAY'S TOUGHER JOBS, HERE'S A NEW TOUGHER MOTOR

WHERE IT'S WET Wet weather doesn't bother the new totally-enclosed Tri-Clad motor. Neither do frequent "washdowns" in food plants.

WHERE IT'S CORROSIVE Acids, alkalis, and fumes are kept out of these new Tri-Clads. Cast-iron enclosures are corrosion-resistant, extra strong.

WHERE IT'S DIRTY Dirt and dust can't get into these Tri-Clads to shorten their life. Smooth surfaces are convenient to clean.

WHERE IRON DUST FLIES Harmful iron dust and metal filings can't get past the inner wall. Bearings are protected from dust.

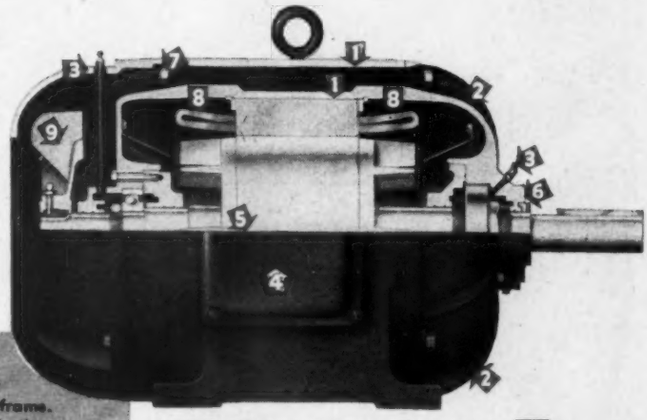
WHERE QUARTERS ARE CLOSE When space is limited for a totally enclosed motor, you'll like these trim, compact new Tri-Clads.

WHERE EXPLOSION HAZARDS EXIST The new Tri-Clad motors are available in explosion-proof constructions where needed.

THE G-E *TRI CLAD* TOTALLY ENCLOSED MOTOR

(1 TO 1000 HP)

In 1940 you welcomed the Tri-Clad open motor with it's *extra protection features*. More Tri-Clads have since gone into service than any other integral-horsepower motor. Now G.E. is ready with a new line of tough, totally enclosed Tri-Clad motors for use in adverse atmospheres. *We believe they are industry's most dependable motors.* Their longer life and lower maintenance will make them a sound investment on almost every job. Apparatus Dept., General Electric Co., Schenectady 5, N. Y.



10-POINT PROTECTION

1. A cast-iron, double-wall frame completely encloses and protects the windings and punchings.
2. Corrosion-resistant cast-iron end shields are machined to provide a tight seal, and protect the motor from dust, dirt, and moisture. Primer and finish coat of Glyptal* varnish affords high rust-resistance.
3. A pressure-relief greasing system, which can be packed with long-life lubricant, protects the bearings.
4. The cast-iron conduit box is diagonally split for easy wiring. Boxes are independently explosion-proof on Class I motors.
5. Nonshrinking compound around motor leads protects motor interiors from dust and moisture at the point where leads pass through the frame.
6. Rotating labyrinth seal further protects motor interior from damage by foreign matter.
7. Large air passages provide adequate protection from overheating. They're easy to keep clean and open, too.
8. Modern, "ageless" insulation treatment includes windings of "Formex magnet wire.
9. The powerful external fan is removable to simplify maintenance; nonsparking type in explosion-proof motors.
10. Individual dynamic balance of rotors and external fans protects against vibration hazards, even under severe operating conditions.

*Trade-mark Reg. U. S. Pat. Off.

FOR THE COMPLETE STORY

Apparatus Department, Section Z750-278C
General Electric Company
Schenectady 5, N. Y.

☐ Please send me GEA-4400, which describes the new Tri-Clad totally enclosed motors.

☐ Please send me GEA-4131, "Motors and Control for Hazardous Locations."

NAME.....

COMPANY.....

ADDRESS.....

8000

GENERAL ELECTRIC

It's the Twisted Cross Bar
that affords safe, sure footing under all conditions. See how hard it is to slip on Blaw-Knox Electroforged Steel Grating. Its rigid, one-piece construction makes it easy to install, easy to keep clean. Admits maximum light and air.

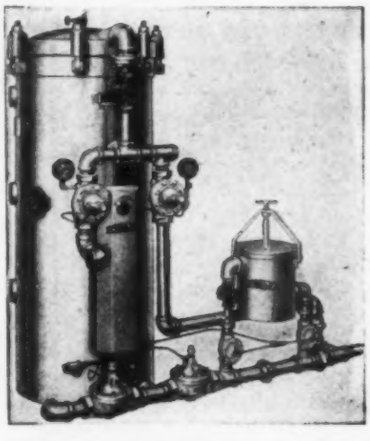
BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
2075 Farmers Bank Building, Pittsburgh 22, Pa.

BLAW-KNOX ELECTROFORGED STEEL GRATING

ELECTRIC HOIST REEL

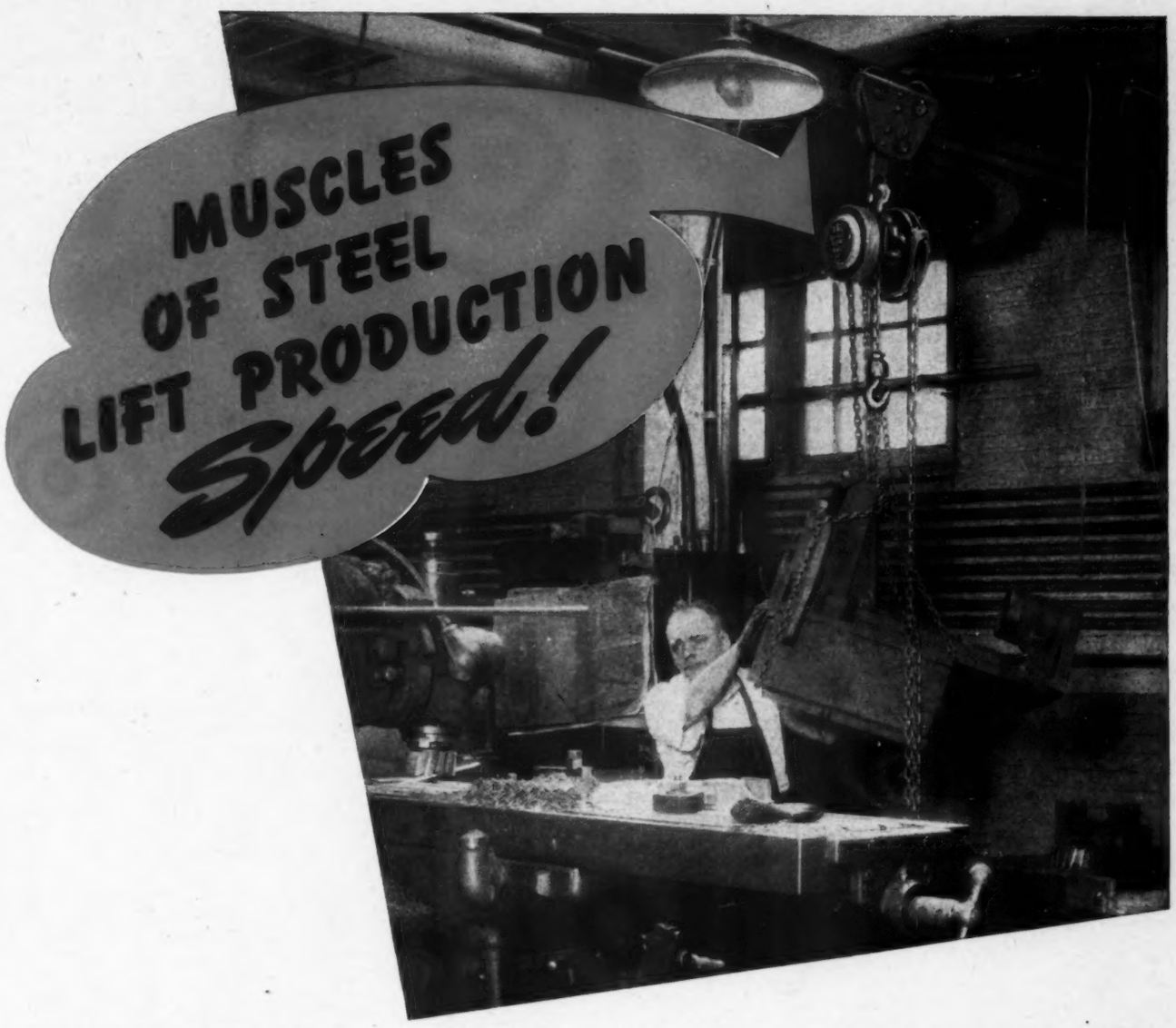
ELECTRIC hoist reel designed especially for use with traveling hoists is announced by Appleton Electric Company, 1701-59 Wellington Avenue, Chicago, 13, Ill. Reel automatically takes up, pays out conductor cable. No exposed current collectors, trolleys or wires. It is designed to team up with any traveling electric hoist within its rated capacity. Serves any stretch of track—straight, or with one or more bends up to double its cable length. Reel is simple to maintain and has oil-less bearings at all points of rotation. Swivel base permits rotation up to 335 degrees.

WATER FILTERS



NEW series of water filters for swimming pools and industrial water filtration is announced by Bowser Inc., Fort Wayne, Indiana. The Fig. 611 Bowser filters range in capacity from 15 to 500 GPM with 7 to 248 square feet of filtering area. Bowser filters are said to occupy only 1/20th the space required for conventional sand filters. Filtered impurities are backwashed to waste and no manual cleaning operations are required. Filter elements are tubular plastic impregnated cartridges. Particles as small as ½ micron (approx. .00002) are removed, including dirt, oils and other foreign matter.

(*Turn to page* 156)



"From hook to hook a line of steel"—that's the Yale Spur-Geared Hand Chain Hoist. It's a "muscle of steel", geared to make light, safe work of heavy lifting jobs. It cuts hoisting time—makes spotting easy—allows workers more time for production. With a No. 1 reputation throughout industry for years of efficient performance, the Yale Spur-Geared Hoist is the No. 1 hand hoist for reducing production costs in *your* plant.

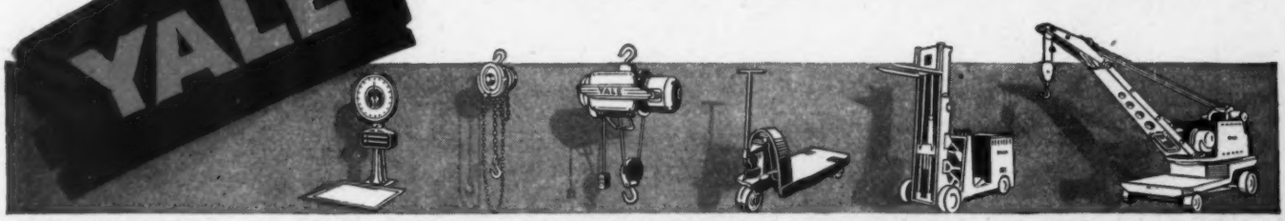
Get all the facts about this precision-engineered and sturdily-built production tool. At the same time, ask about the money-saving advantages of Yale Electric Hoists, Hand Lift and Electric Trucks, and Yale-made Kron Scales. All are efficient material handling machines that take "muscle money" off your payroll. Phone or write to the nearest representative for complete information. The Yale & Towne Manufacturing Company, 4530 Tacony Street, Philadelphia 24, Pa.

WORLD-WIDE
YALE HOIST
SALES and SERVICE
Available Through
Your Distributor

YALE

MATERIAL HANDLING MACHINERY

CUTS PRODUCTION COSTS... SAVES TIME... SAVES EFFORT... PROMOTES SAFETY



KRON INDUSTRIAL SCALES • HOISTS — HAND AND ELECTRIC • TRUCKS — HAND LIFT AND ELECTRIC

SHANTIES ARE OUT OF STYLE

It's good business to keep your small utility buildings out of the shanty class. You can do it at low cost and get much better structures by specifying standard ARMCO STEELOX Buildings.

This way your utility buildings, tool houses, and other buildings have the two big advantages of a permanent structure — long life and low upkeep — plus easy portability should conditions change. They can be taken down and reassembled in another location as many times as you wish.

STEELOX Buildings are adaptable to many requirements. They can be quickly wired, easily insulated, or may be left uninsulated without affecting weather-tightness. All-steel construction is an excellent fire-barrier, while interlocking joints help keep out dust and vermin. The galvanized PAINTGRIP surface of STEELOX can be painted immediately — assures long paint life.

STEELOX Buildings are prefabricated in a wide range of standard sizes. They are easy to handle and are erected quickly by unskilled labor.

Write for prices and complete information on standard ARMCO STEELOX Buildings. Armco Drainage & Metal Products, Inc., and Associated Companies, 2905 Curtis Street, Middletown, Ohio.

ARMCO STEELOX BUILDINGS

SILICONE MOLD RELEASE FLUID

EMULSION of Dow Corning Silicone Mold Release Fluid has been made available as a release agent in the molding of various types of synthetic and natural rubber. It is known as Emulsion No. 35. It is said to give effective release for several moldings and to permit faster molding cycle because molded products can be removed from the mold before completely cooled. It does not build up the mold surface, and eliminates the breaking in period normally required for new molds. Folder available.

MEASURES THICKNESS MOVING MATERIALS

GAGING instrument known as Measuray, utilizing X-Ray and electronic application for non-contact, continuous or spot checking of thickness of all types of moving materials, is announced by the Sheffield Corp., Dayton, Ohio. Accuracy can be held to better than one percent of material being checked. Metal foil can be checked as easily as sheet materials 3/16" thick. Concentricity can be checked to measure a wire surrounded by insulation. Speed of movement, 5' or 5,000' per minute, has no effect on accuracy of the unit. Measuray compares thickness of material with sample, variations of thickness being indicated in percentages. Contact with material to be gaged is unnecessary. Four standard units available. Thickness, density and type of material determine which of units is to be applied.

RECORDER DETECTS CO_2 IN 3½ SECONDS

NEW instrument said to be so sensitive to variations in the percentage of CO_2 in flue gas that it records changes 3½ seconds after CO_2 content has reached analyzing cell is announced by Davis Emergency Equipment Co., Inc., 180 Halleck St., Newark 4, N. J. Recorder works on thermal conductivity analysis principle. Flow rate through gas sampling line does not exceed 250 cc per min.; minimum flow required is 20 cc per min. Brown Electronik recorder is used. It is furnished with 24-hr. circular charts with range of 0 to 20 CO_2.

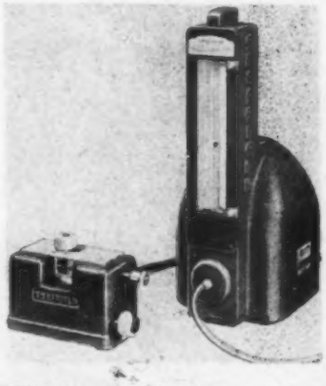
UNIT SUBSTATIONS

HIGH voltage incoming line, transformer, and low voltage feeder sections are combined in one compact assembly in the new all-in-one Unit Substations built by Wagner Electric Corporation, St. Louis. Substations are standardized in ratings 100, 150, 200 and 300 KVA, 3 phase, 60 cycles. Choice of combinations of different types of transformers and high and low voltage equipment makes them suitable for wide range of applications. Units are delivered ready to connect. Accompanying illustration shows streamlined construction of the substation with air-cooled transformer for indoor installation.

ANNOUNCE NEW 75-TON HYDRAULIIC PRESS

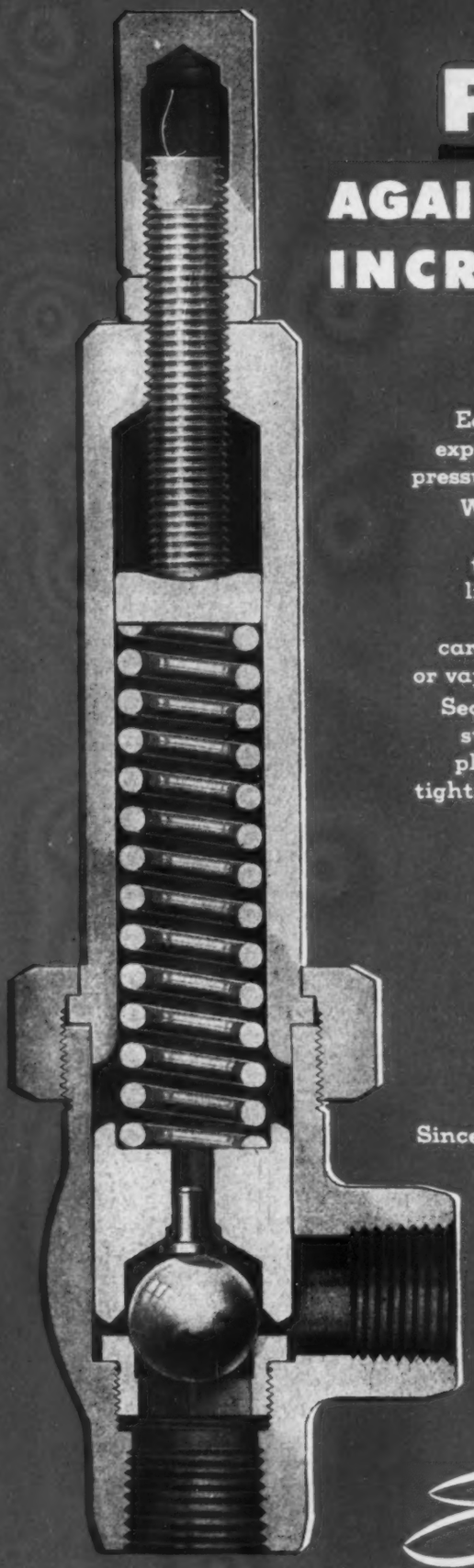
ADDITION of 75-ton hydraulic press to its press line is announced by the Watson-Stillman Co., Roselle, N. J. Machine is well fitted to handle many kinds of light embossing, laminating and similar work. Four-way valve affords complete manual control of the press at all times. Operating pressure is 3000 lbs. psi. Pump is separate unit.

INTERNAL MEASURING INSTRUMENT



NEW Precisionaire internal measuring instrument for the accurate checking of small rings from 5/32" to 1" internal diameter is announced by the Sheffield Corporation, Dayton, Ohio. Instrument indicates taper, bellmouth and out-of-round conditions and has an amplification of approximately 35,000 to 1. Rings may be explored to a depth of 9/16". Instrument can be set up quickly and is easily adjustable. No matrix impressions are necessary.

(*Turn to page* 158)



PROTECTION

AGAINST SUDDEN PRESSURE INCREASES WITH EDWARD RELIEF VALVES

Economical Edward forged steel relief valves protect expensive equipment against sudden and dangerous pressure increases.

Widely used in power, chemical process, petroleum, hydraulic, marine and general industrial service, these relief valves are particularly suited for pump lines, drums, heat exchangers and unfired pressure vessels generally. Regularly available with either carbon or stainless steel springs, for water, steam, oil or vapor service.

Seat and ball disk are precision machined of EValloy stainless steel. The hardened stainless steel bearing plug gives point contact with the disk for quick and tight reseating after operation.

DIMENSIONS AND WEIGHTS—Fig. 141
Angle Relief Valve

SIZE	1/4" & 3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Center to End	1 1/2	1 7/8	2 1/8	2 3/8	2 3/4	3 1/8	3 3/4
Center to Top	6 1/2	7 3/4	9 3/4	10 1/8	12 3/8	14 1/2	16 1/4
Weight—Lbs.	2 1/4	4 3/4	6 1/4	13	19 1/2	31	40

Valves in stock for relieving pressures up to 900 lb.

Since every valve is factory set for the required relieving pressure, orders should include information concerning service, frequency of operation, and relieving pressure. For data on other standard Edward globe and angle stop, check, gate, blow-off, non-return, feedline, gage and plug valves and strainers. Write for Catalog 103.

Edward Valves, Inc.

Subsidiary of Rockwell Manufacturing Co.

EAST CHICAGO, INDIANA

Fluorescent and *Incandescent* Lamps for industry bearing the Champion *diamond* mark are shining examples of:

1 Quality — the result of forty-six years of concentration on fine lamps for industrial service. Guaranteed to equal or exceed Federal Specifications and backed by the resources of one of the largest lamp producers in the industry.

2 Lighting Service — trained lighting experts at all times available in the field to give you competent and unbiased recommendations on correct lighting applications for every shop and office purpose.

3 Economy — Champion production and distribution is organized to insure minimum lighting cost and lower lamp costs.

Look for the lamps with the Champion diamond mark. A competent industrial distributor near your plant stands ready to supply you with CHAMPIONS. Let us give you his name.

CHAMPION LAMP WORKS

Lynn, Massachusetts

A DIVISION OF CONSOLIDATED ELECTRIC LAMP CO

WIRE STRIPPER KIT

KIT for stripping the insulation of any wire from size 8 to 30, known as the Speedex 733-K Stripper Kit, is announced by the General Cement Manufacturing Co., 919 Taylor Ave., Rockford, Ill. Kit includes the Speedex and 7 interchangeable blades in steel case. Maker states that in production average operator can strip 800 to 1000 wires per hour.

ASSEMBLY PRESSURE GAGE

ILLUSTRATION shows Dillon mechanical pressure gage for indicating pressures in mechanical assemblies. The gage makes it possible to measure working loads in "tight" spots, and maker states it has been especially designed to slip into a small space and give accurate engineering data quickly. Models are compact and of light weight, the 0-100 pound model measuring 3⅝" long x 2 3/32" high and 1¾" high; weight 1¼ lbs. It can also be used to check pressure between spot welding machine electrodes, pressures between press platens, moving rollers, and tension in moving tread, twine, wire, etc. Range is from 100 to 5,000 lbs., with 10,000 lb. model in development. W. C. Dillon Co., 5410 W. Madison St., Chicago, Ill. Printed matter available.

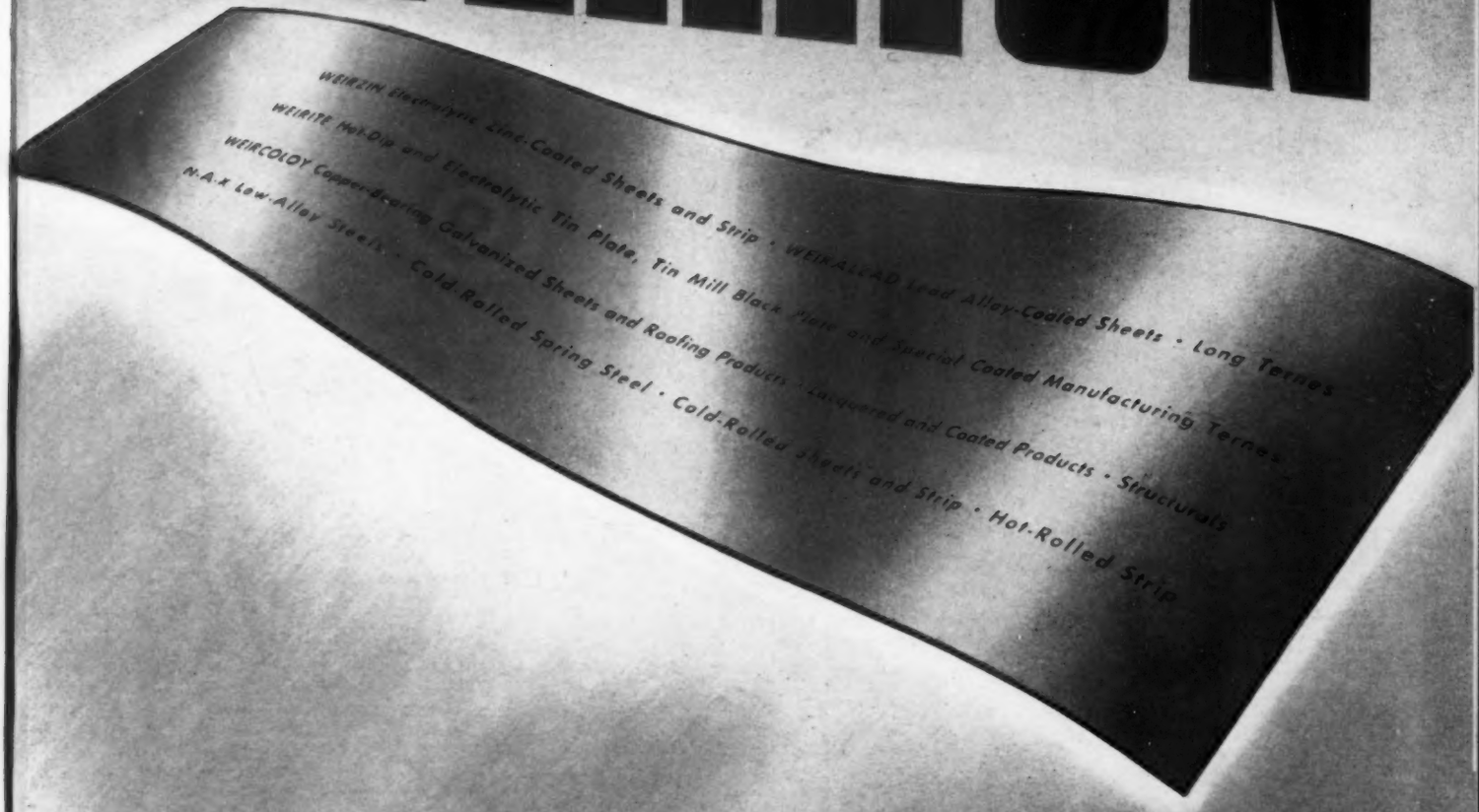
POWDER METALIZING UNIT

ILLUSTRATION shows new type of powder metalizing unit announced by the Wall Colmonoy Corp., 19345 John Rd., Detroit 3, Mich. It is known as the spray-welder and is for use with powdered compositions. Unit is said to make it possible to combine the advantages of both welding and metalizing process. It is first used to apply overlay and then as welding torch to fuse overlay to the base metal to obtain fusion or molecular bond identical to that obtained when the same alloy in rod form is applied in acetylene welding.

(*Turn to page* 160)

RECOGNIZED BY REPUTATION...

WEIRTON


WEIRZINC Electrolytic Zinc-Coated Sheets and Strip • WEIRALCAD Lead Alloy-Coated Sheets • Long Ternes
WEIRITE Hot-Dip and Electrolytic Tin Plate, Tin Mill Black Plate and Special Coated Manufacturing Ternes
WEIRCOLOY Copper-Bearing Galvanized Sheets and Roofing Products • Lacquered and Coated Products • Structurals
N-A-X Low-Alloy Steels • Cold-Rolled Spring Steel • Cold-Rolled Sheets and Strip • Hot-Rolled Strip

WEIRTON STEEL COMPANY

WEIRTON STEEL CO.

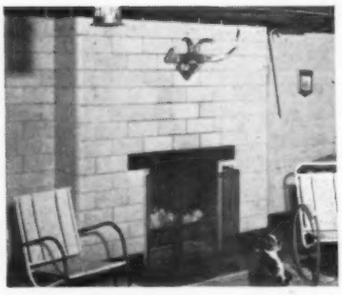
WEIRTON, W. VA. Sales Offices in Principal Cities

Division of **NATIONAL STEEL CORPORATION**

Executive Offices, Pittsburgh, Pa.

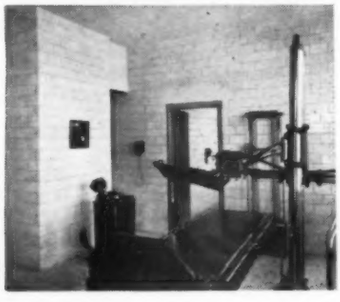
ARKETEX

CERAMIC GLAZED STRUCTURAL TILE



FOR

Every Need



Versatility combined with practicability . . . a combination that means the finest in ceramic glazed structural tile . . . Arketex.

Available in several sizes, textures, and more than a dozen permanent colors, Arketex needs only soap and water cleaning; the permanently glazed surface is impervious to oils, grease, moisture, acids, or alkalies . . . will not scar, mar, crack, or craze.

When planning theaters, hospitals, schools, restaurants—public buildings of all kinds—practical architects and builders choose Arketex for both interior and exterior walls. An ideal combination of rare beauty and modern utility, Arketex is a permanent wall and finish all in one . . . *the first cost is the only cost!* Always specify Arketex . . . first with the finest in ceramic glazed structural tile.

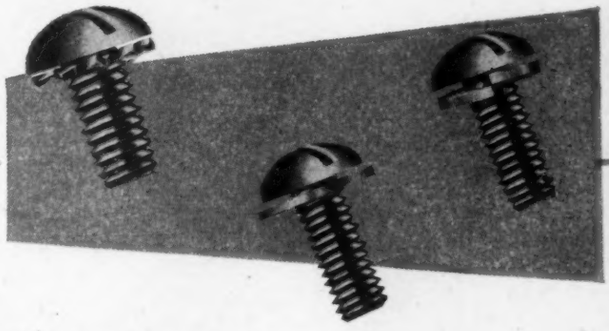
AR-KE-TEX

BETTER WALLS

WITH ARKETEX CERAMIC GLAZED STRUCTURAL TILE

ARKETEX CERAMIC CORPORATION • BRAZIL, INDIANA

always in balance as to count, size, and quality



Ordering, stocking and handling of screws and washers are all simplified when you order SEMS . . . for SEMS bring you *both* washer and screw pre-assembled as a single unit. There's no chance for the washer to fall off . . . inventories always balance . . . and both parts have matching finish.

You can be sure that your workers are using the right size and type of washer for it is permanently held under the screw head by the rolled thread.

Yes, SEMS mean simplified methods, improved quality and reduced costs!

Try them yourself. Send for samples today!

use SEMS the MODERN fastener unit

SEMS are Pre-Assembled Washer and Screw Units in which the Washer is held on the Screw by the Rolled Thread and is free to rotate.

SEMS ARE AVAILABLE FROM THE FOLLOWING MANUFACTURERS

Chandler Products Corp.
Cleveland, Ohio

Continental Screw Co.
New Bedford, Mass.

Corbin Screw Division
The American Hardware Corp.
New Britain, Conn.

Eaton Manufacturing Co.
Reliance Division
Massillon, Ohio

The Lamson & Sessions Co.
Cleveland, Ohio

National Lock Co.
Rockford, Ill.

The National Screw & Mfg. Co.
Cleveland, Ohio

New England Screw Co.
Keene, N. H.

Pheoll Manufacturing Co.
Chicago, Ill.

Russell, Burdsall & Ward Bolt & Nut Co.
Port Chester, N. Y.

Scovill Manufacturing Co.
Waterville Division
Waterville, Conn.

Shakeproof Inc.
Division of Illinois Tool Works
Chicago, Ill.

Steel Co. of Canada, Ltd.
Hamilton, Ont., Canada

Stronghold Screw Products Inc.
Chicago, Ill.

American Screw Co.
Providence, R. I.

Central Screw Co.
Chicago, Ill.

TRIPLEX

for Toughness

Known around the World...

Tough, rugged, TRIPLEX threaded fasteners have a world-wide reputation for quality. They are engineered for hard service and long life.

Cap Screws in particular have to "take a beating" in today's high speed machinery and equipment. Using TRIPLEX Cap Screws will minimize your service and maintenance problems.

A turn to TRIPLEX is a turn to the better. Write for our new catalog. It's a handy-dandy.

THE TRIPLEX SCREW COMPANY

5331 GRANT AVENUE

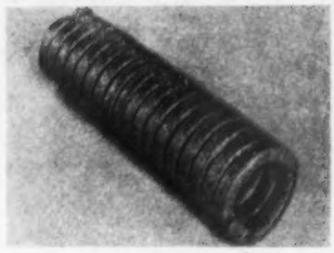
CLEVELAND 5, OHIO

Cap Screws in All Sizes and All Four Heads

TRIPLEX THREADED FASTENERS

CAP AND SET SCREWS · BOLTS, NUTS AND RIVETS

FLEXIBLE METALLIC PACKING

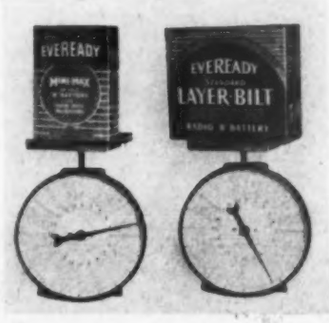


FLEXIBLE metallic packing for steam and air rods, centrifugal pump shafts, valve stems and expansion joints where the temperatures do not exceed 450° F. or surface speed is not greater than 600′ per minute, is announced by Raybestos-Manhattan, Inc., Asbestos Textile & Packing Division, Manheim, Pa. It is a resilient flexible metallic packing incorporating a cross sectional composition of non-frictional foil combined with asbestos yarns. Construction produces a compressible metallic packing that is sensitive to gland adjustment.

PEEL-OFF SPRAY BOOTH MASKING

FILMITE is name of fluid compound sprayed or brushed on walls of paint spray booths, forming a tough skin over non-hardening base, which readily peels off, announced by the DuBois Co., Cincinnati 3, Ohio. It is water soluble, never sets hard, halts paint penetration and is non-flammable, non-corrosive, and non-toxic. Maker states it saves up to 90% of labor in booth cleaning.

LIGHTWEIGHT B BATTERY



NEW 45 volt B battery having only half the weight and size of prewar models has been developed by Eveready Batteries for use with electronic industrial test equipment, tripping circuit breakers, electronic and telephone devices and other equipment. It utilizes the "Mini-Max" principle developed to power the tiny radio sets in proximity fuses. The 45 volt B battery displaces only 76.6 cu. in. as compared to the 179 cu. in. in old-style layer-built battery, and weighs 4 lbs. 8 oz. as compared to 8 lbs. 6 oz. Outside dimensions are 5⅛" x 2 1/16" x 7¼".

(*Turn to page* 164)

METAL-CUTTING LUBRICATION

Tool Life Increased 50% with Improved Cutting Oil

TRANSPARENT, STAIN-PROOF OIL PRODUCES GRATIFYING RESULTS

"We knew from certain operating conditions on a Landis automatic threading machine at a prospect's plant* that we could do a better job with Chillo No. 3 than was being done with a competitive product having approximately 14% lard and 1% sulphur compound.

Lubrication Engineer's Report

"The operation being performed was threading 14 to 16 foot bar stock from all grades of materials as to hardness and all sizes from ½ inch to 2 inches. On 16 foot bars of 1 inch, 1¼ inches and 1½ inches dimensions the average output was four bars of 64 feet per chaser grind with the 14% lard and 1% sulphur compound oil, and on under one inch bars the average output was 6 bars or 96 feet. The average speed or RPM while threading was 50 to 64 on the one inch and over, while the average on the under one inch was 64 to 84, depending on the hardness of the metal.

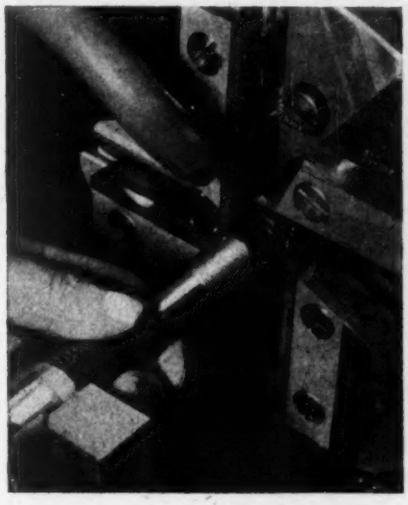
"Although the threads were good and acceptable with the oil in use, we produced a much more uniform and smoother thread with Cities Service Chillo No. 3. We increased the tool life from four bars on the one inch and over to six and sometimes seven or an average of 100 feet per chaser grind. The under one inch production per chaser grind was increased to nine bars or approximately 140 feet.

Tool Life Increased

"We stepped up production by increasing the RPM on the under one inch bars to 84, 90, or 106, depending on the hardness, and increased the larger stock bars to 64 and 84 RPM.

Production Stepped Up

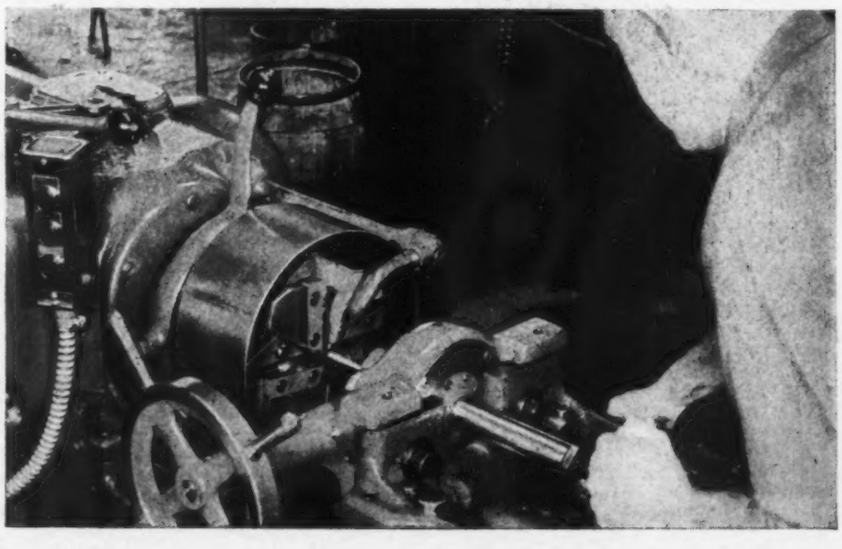
"We were requested to supply a transparent oil that would not leave stains on the finished product. With this in mind and knowing that the plant would be very critical should some work become stained, we recommended Chillo No. 3 for the job with very gratifying results."



Cities Service makes available to any industrial organization operating in its marketing territories East of the Rockies, a highly specialized lubrication engineering service. If you're facing a metal-working problem—don't delay—call your local Cities Service office (in the South call Arkansas Fuel Oil Company), or write to Cities Service Oil Company, 60 Wall Tower, New York 5, N. Y.

Engineering Service Available

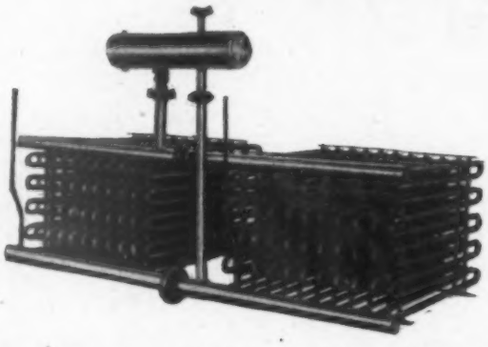
*Name on request.



CITIES SERVICE OILS
ONCE-ALWAYS

FOR EVERY LUBRICATION PROBLEM CALL Cities Service FIRST!

IT MAY BE BIG..
IT MAY BE SMALL



Regardless of the size and type of bend required in your installation, Swan specialized experience in bending, coiling and fabrication of piping and tubing offers you skilled engineering service, precise manufacturing facilities, and economical handling of the job from blueprint to on-time delivery.

We are prepared to submit designs, specifications and estimates on intricate coils and bends in any of the standard metals or alloys.

SWAN ENGINEERING CO., Inc.
12-58 Nelson Street
Bloomfield, N.J.

SHIFT
Your Production Parts Problem
TO OUR SHOULDERS

We have the plant capacity and the know how . . . are completely equipped to turn out completed parts (threaded or unthreaded) or to do threading only. We specialize in specials, handle complete assemblies.

Single and multiple spindle. Screw machine products up to 3¼ inches from steel, brass or other metals.

SPECIAL STUDS

Try us on special studs; machine screws, nuts and bolts; special headed and threaded parts. Threaded rods, 10 to 12 foot length.

Send us your specifications and let us quote.

KRAMER AND KRAMER
3629 MEDFORD ST.
LOS ANGELES 33, CALIF.

Widely Used to Keep Count!

Industry's favorite "Watchdog of Production" since 1906 . . . Redington Counters are *widely used* on punch presses, pumps, screw machines, packaging machines . . . conveyor lines, can making and box making machinery . . . in fact, *all types* of machinery . . . and production lines. Easy to install . . . *100% accurate*. Write for new catalog.

F. B. REDINGTON CO.
103 S. Sangamon St Chicago 7, Ill.

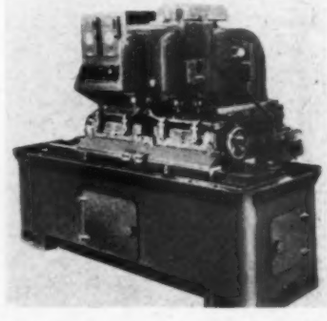
PIRANI TUBES

ILLUSTRATION shows Pirani tube, suitable for pressure gages and leak detectors in evacuating apparatus and automatic pressure recording equipment, made by Electronics Divn., Sylvania Electric Products Inc., 500 5th Ave., New York, N. Y. Readings may be obtained with plus or minus 5% accuracy within a pressure range of one to one thousand microns. Overall length of tube is approximately 8". Tubes are designed to operate at 1.5 volts, 100 millamperes. Cold resistance of the filament is 6.6 ohms. Hot resistance at 100 millamperes in evacuated tube ranges from 15.5 to 17.0 ohms.

FACE SHIELD

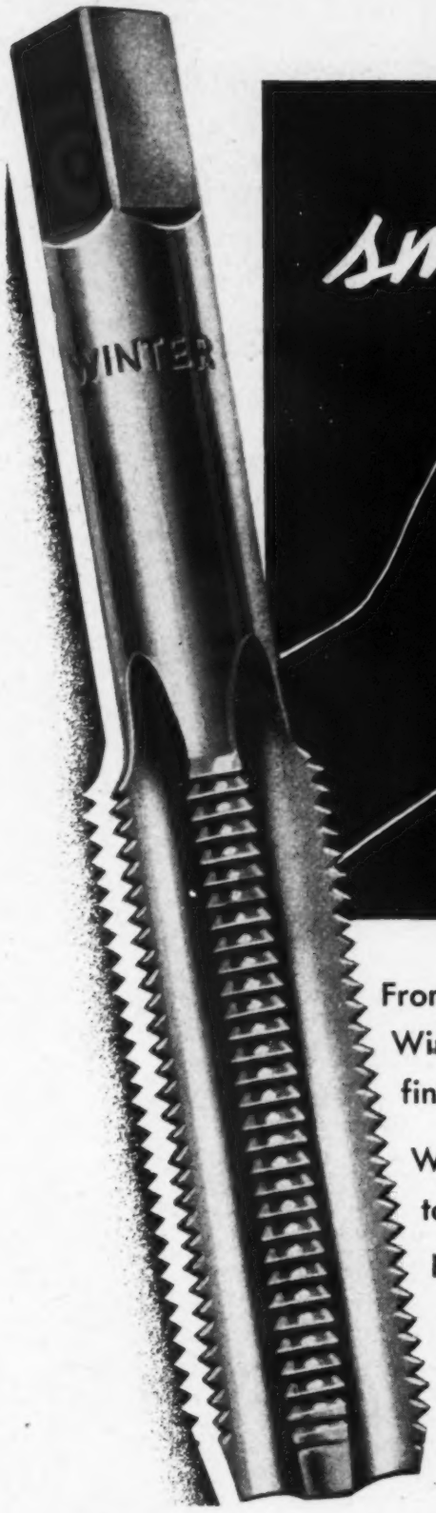
FACE-shield designed to give extra over-all protection, especially on jobs such as babbitting, handling chemicals and so on, is announced by the American Optical Co., Southbridge, Mass. The extra large window, 18¾" x 10" is of cellulose acetate .040" thick. It extends around the face, covering the ears. Fibre headguard protects upper forehead and covers the entire top of the head. Easily adjusted to varying head sizes.

MILLING MACHINE



TWO stage machine called "Hy-Mac" for milling the bosses of cylinder head castings is announced by Hydraulic Machinery, Inc., 12825 Ford Road, Dearborn, Michigan. Machine is hydraulically operated and electrically controlled. As operator unloads and loads part in station away from work position, milling head moves in, machining part at work station. Milling head then retracts and the part operator has just loaded moves into work station and process is repeated. Production: 90 per hour @ 80%. Machine is 48" wide, 60" high, 72" long.

(*Turn to page* 166)



small tap . . . . . BIG savings

From the smallest machine screw sizes to the largest taps, Winter Taps are made with that exacting precision and finish that assure smooth accurate threads at big savings.

Winter Taps — large and small — are built to handle tough production assignments as well as the finest precision work. Try them!

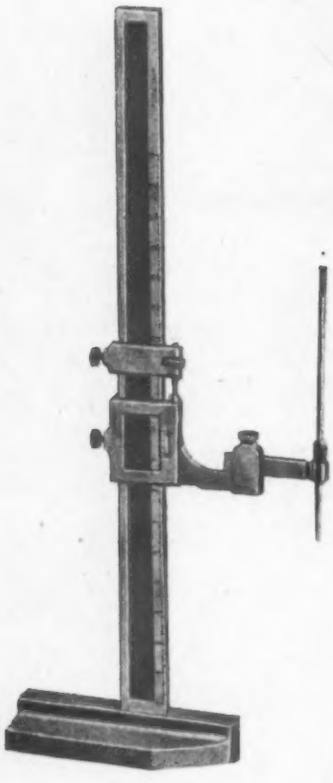
The broad experience of Winter field engineers particularly fits them to help you with your threading problems. Call your local Winter Distributor — your one source of complete tapping service and supply.

Winter Brothers COMPANY

Wrentham, Massachusetts, U.S.A.

BRANCH STORES: SAN FRANCISCO, CALIFORNIA · CHICAGO, ILLINOIS · DETROIT, MICHIGAN

A DIVISION OF THE NATIONAL TWIST DRILL & TOOL CO., ROCHESTER, MICHIGAN



ADD THE RIGHT

STARRETT TOOL

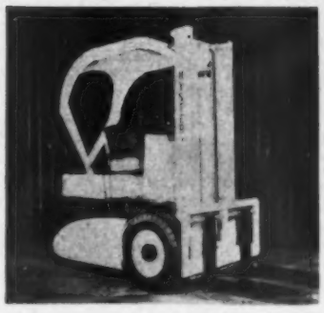
Add a Starrett Vernier Height Gage to the photo above and you have a picture that is familiar wherever fine precision work is done. Starrett Tools inspire the confidence of those who use them — help them make the most of their skill and experience. That's why it pays to insist upon *Starrett Tools* for all important measuring and inspection jobs. Be sure to specify *Starrett* when you requisition precision measuring tools.

Buy Through Your Distributor

THE L. S. STARRETT CO.
ATHOL · MASSACHUSETTS · U. S. A.
World's Greatest Toolmakers

STARRETT
PRECISION TOOLS • DIAL INDICATORS • STEEL TAPES • GROUND FLAT STOCK
HACKSAWS • BAND SAWS FOR CUTTING METAL, WOOD, PLASTICS

4,000 LB. FORK LIFT TRUCK



PNEUMATIC tire 4,000 lb. fork-type lift truck, known as the Hyster-40, is announced by the Hyster Co., Portland, 8, Ore. Using Wisconsin air-cooled motor, trunion steering and 7:00 x 12 pneumatic tires, truck is said to be well adapted for use over any type of indoor or outdoor road surfaces.

IMPERMEABLE AIR-DRYING COATING

CORROSITE is name of practically impermeable air-drying film, said to be completely resistant to most acids, all alkalis, and many chemicals, introduced by Baker Synthetics, Inc., 51 E. 52nd St., New York. It is a combined thermoplastic and thermosetting film. Maker says it will bond to any clean surface, and also that it is electrolytically impervious, also, that smoothness compares favorably to porcelain, and that it will not crack, chip, or lift and will withstand temperatures to 250° F. It is available in black, clear, aluminum, and gray.

NEW MULTIBREAKER

STREAMLINED MO-4 Multibreaker designed especially for the protection of 4 single phase circuits or less, is announced by the Trumbull Electric Mfg. Co., Plainville, Conn. Unit has automatic overcurrent and short circuit protection for branch circuits. Combined thermal and magnetic characteristics give the MO-4 greater speed in tripping. It is made to protect circuits of 10 and 20 amps, *plus 31 amps,* (to conform with new code wire ratings effective November 1, 1946.)

(*Turn to page* 168)

Patented and Patents Pending

From the compact Model 2½ . . .

— to the hard-hitting Model 20 . . .

every Kidde Portable works the same fast, simple way . . .

AIM AT THE FIRE — PULL THE TRIGGER!

With *any* size *Kidde* Carbon Dioxide Portable, the *natural* way to fight a fire is the *right* way too! Simply aim the nozzle at the flames — then press the trigger. It's just as easy as that.

The dry, clean carbon dioxide from *Kidde* Portable Extinguishers is deadly to fires in flammable liquids or electrical equipment—but harmless to everything else. No danger of shock when used on electrical equipment. No after-fire mess to clean up.

Carbon dioxide capacities: 2½, 5, 10, 15 and 20 pounds. Write for full information.

Walter Kidde & Company, Inc., 1250 Main Street, Belleville 9, New Jersey

Kidde

The word "Kidde" and the Kidde seal are trade-marks of Walter Kidde & Company, Inc.

Kidde

CM COMET

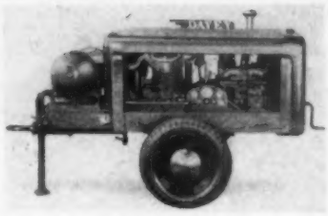
HOIST-POWER helps manpower to be more productive

Capacities from ⅛th to 1 ton. Available for plug-in on 110, 220 or 440 volt circuits. One-hand control. Prices from $130.

Materials handling is said to represent the largest single labor cost in industry—the largest single use of manpower. CM Comet Electric Hoists can make this same man (and woman) power more productive, more efficient and with less fatigue. From "receiving", through the production line, to "shipping", CM Comets are doing an outstanding job in making both ends meet. Write today for CM Bulletin 138 for entire illustrated details.

CHISHOLM-MOORE
HOIST CORPORATION
(Affiliated with Columbus-McKinnon Chain Corporation)
GENERAL OFFICES AND FACTORIES: 136 Fremont Ave., TONAWANDA, N. Y.
SALES OFFICES: New York, Chicago and Cleveland

PORTABLE COMPRESSOR



NEW model 60V portable compressor is announced by Davey Compressor Co., Kent, Ohio. The compressor produces 60 c.f.m. at 100 lbs. pressure and is available in standard skid and 2-wheel pneumatic tired trailer mounting weighing 2100 lbs., or with flanged wheels for railroad work or as an "Auto-Air" compressor for truck mounting. Skid, trailer & railway models are powered by Hercules IXB Engine.

DEVOE PAINT BRUSH CLEANER

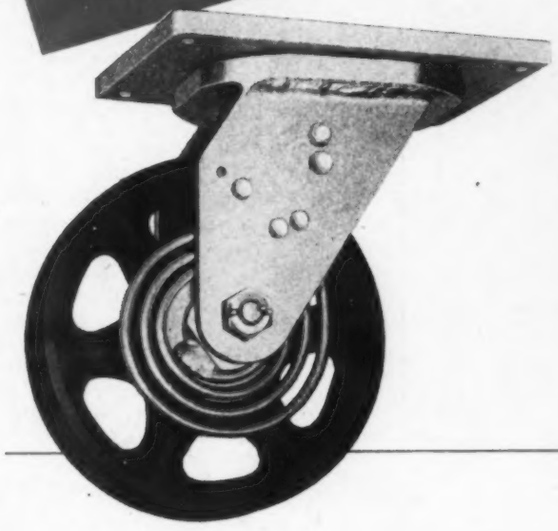
PAINT brush cleaner, known as Devoe Brush Shampoo, announced by Devoe & Raynolds Co., Inc., 44th St. & First Ave., New York, N. Y., is said to be equally efficient for cleaning hardened paint, lacquer, varnish, shellac or enamel, and to clean right down to the heel of the brush. It is non-injurious to hog bristle, nylon, setting compounds, or painters' hands. Brushes can be cleaned, rinsed under faucet without staining the sink or wash basin.

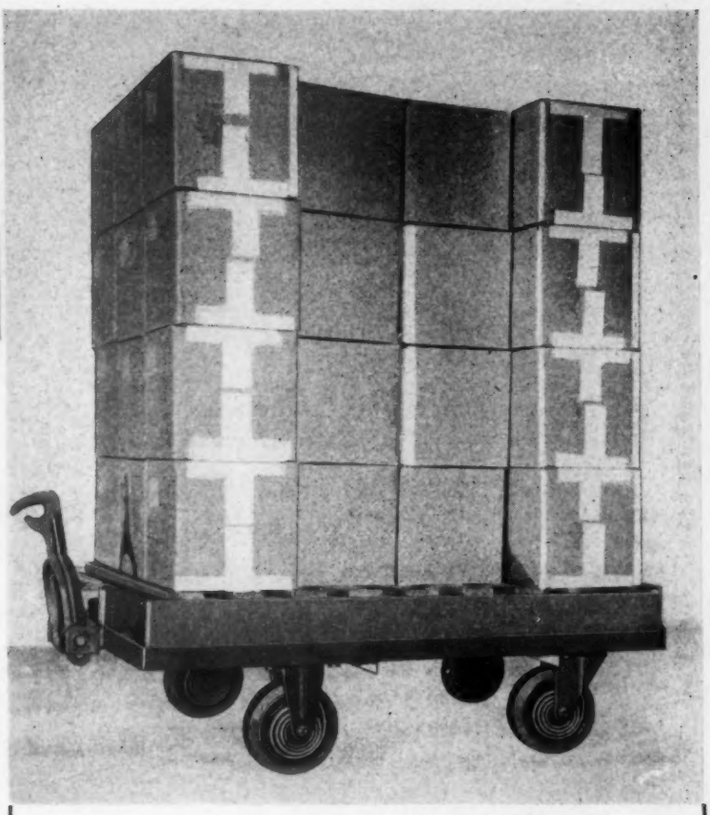
INDUSTRIAL TRUCKS

APPLICATION of the warplane swiveling gun turret to the Salsbury Turret trucks results in a new type of industrial truck announces Salsbury Motors Inc., Pomona, California. Mounted in small industrial trucks, with the drive wheel on the ground, the Turret powered with a 6 h.p. gasoline engine can be turned to provide power in any direction, thus eliminating the need for a reverse gear. Automatic transmission and clutch eliminate gear shifting. Three models available: Turreteer for two-ton load; the Turretug, tractor-built for trailer systems; and, Turretruk, cargo truck with large deck. Printed matter available.

(Turn to page 170)

HERE'S BASSICK'S DOUBLE-VALUE* CASTER FOR YOUR TRAILER TRUCKS





How a prominent manufacturer protects equipment, loads and floor surfaces. A trailer truck equipped with Bassick "Floating-Hub" Casters.

***Double value because it combines two distinct features . . .**

1. BASSICK'S new precision-built caster engineered specifically to take the abuse and shocks of power-pulled trucks . . . with Timken swivel-thrust bearing . . . top quality in every detail of construction.

2. BASSICK'S "Floating-Hub" wheel construction, with: ***Built-In Spring Action . . . Built-In Resilience . . . Built-In Shock Absorption . . . which give your trailer trucks . . . Smoother Riding . . . Easier Handling . . . Longer Life.***

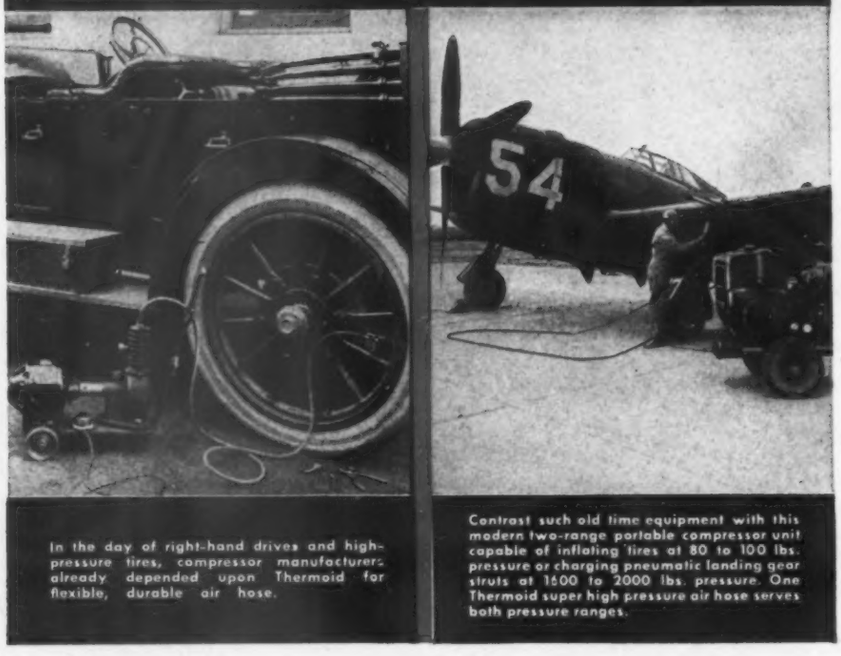
Wherever the going is fast, rough and tough, this advanced new super caster and "Floating-Hub" wheel combination is raising efficiency and lowering costs of materials handling . . . with maximum protection for equipment, loads and floor surfaces. Write today for full information about the advantages of Bassick "Floating-Hub" Trailer Truck Casters in your own production. THE BASSICK COMPANY, Bridgeport 2, Connecticut. Division of Stewart-Warner Corporation. *Canadian Division:* Stewart-Warner-Alemite Corporation, Belleville, Ontario.

For a preview of the latest developments in casters and wheels, visit Bassick's Display at the National Materials Handling Exposition . . . Cleveland Auditorium, January 14-17, 1947.

Making more kinds of Casters . . . Making Casters do more

Bassick

Thermoid — For Progress in Industry



In the day of right-hand drives and high-pressure tires, compressor manufacturers already depended upon Thermoid for flexible, durable air hose.

Contrast such old time equipment with this modern two-range portable compressor unit capable of inflating tires at 80 to 100 lbs. pressure or charging pneumatic landing gear struts at 1600 to 2000 lbs. pressure. One Thermoid super high pressure air hose serves both pressure ranges.

More and more Thermoid hose is being used as original equipment because original equipment manufacturers realize that Thermoid hose will make the difference between satisfactory and unsatisfactory performance of their equipment. Therefore, for the same reason, you should use Thermoid hose to cut your replacement hose costs. You can rely on Thermoid for any hose—air, welding, hydraulic, oil and gasoline, water, suction, creamery and many special purpose hoses to deliver satisfactory service.

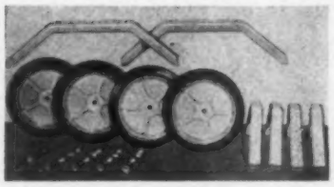
Consult your local Thermoid Jobber or direct factory representative for the right solution to your hose, belting or friction material problems. Thermoid brings you the engineering skill and industrial rubber experience of more than 60 years.

THE THERMOID LINE INCLUDES:
Transmission Belting • F.H.P. and Multiple V-Belts and Drives • Conveyor Belting • Elevator Belting • Wrapped and Molded Hose • Sheet Packings • Industrial Brake Linings and Friction Products.

Thermoid Rubber
DIVISION OF THERMOID COMPANY
[illegible] Whitehead Road, Trenton 6, New Jersey

Contributor to Industrial Advancement Since 1880

UTILITY WHEELS



RUBBER tired steel utility wheels for general industrial use are announced by Palmer Manufacturing Co., 115 Clinton Rd., Cleveland, Ohio. Palmer wheels are said to have withstood individual vertical load tests of over 1,000 lbs. and are used for industrial wagons and carts, mobile fire-fighting units, dollies, mobile engine racks, acetylene tank carts, etc. Elimination of cross axle does away with limitation of width or stability in vehicle design. Wheels come in 8" and 5½" diameters in sets of four with stamped steel assembly fixtures, or as individual wheels with both ½" and ⅜" bushings.

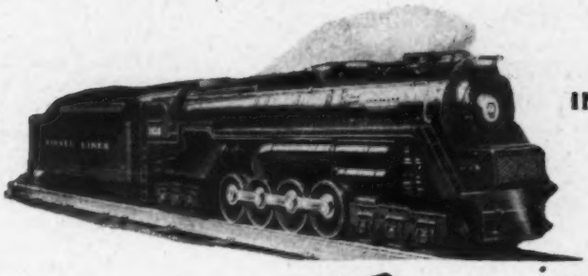
WORK POSITIONER

WORK positioner known as the Powrarm Universal Positioner, for holding and positioning virtually all kinds of benchwork, is announced by the Garfield Engineering Corp., Troost Ave. & Bannister Road, Kansas City 5, Mo. Positioner illustrated holds light or heavy work and permits turning 360° at any angle on horizontal or axial planes, and 180° on vertical planes. Company announces wide assortment of attachment for various types of work. Unit is also available with attachment for facing or hard welding. Powrarms are produced in hydraulic and mechanical models.

MELTING FURNACE

ALUMINUM gas or oil-fires melting furnace designed for moderate production needs of pattern shops, smaller foundries etc., is announced by Kindt-Collins Company, 12651 Elmwood Ave., Cleveland, 11, Ohio. Aluminum can be melted and poured directly from alloy metal pots which can withstand more than 100 heats. Quick melting with low fuel consumption. Available in 50 lb. capacity single units, or 100 lb. capacity double units.

(*Turn to page* 172)



INDEPENDENT INVESTIGATOR TELLS HOW . . .

LIONEL *gives Assembly a clear track*

"We use Phillips Screws on 27 different products," Lionel's chief engineer told the Peck Co. investigator, on another study of assembly savings made by prominent manufacturers using Phillips Screws.

"PHILLIPS SCREWS ELIMINATE DRIVER SLIPS THAT USED TO COST A HALF MAN-HOUR EACH. On most parts for Lionel locomotives, cars, and accessories, the finish is applied before assembly, so that a driver slip meant disassembling the product and either junking the part or stripping off the paint for refinishing. The time lost would average about ½ man-hour per slip. This time is saved since we switched to Phillips Screws.

"PHILLIPS SCREWS MAKE DIFFICULT ASSEMBLIES EASIER, FASTER. Fastening the motor base inside the body of a model locomotive is one example. Space here is too small to allow holding a screw with the fingers. In many assemblies the space is too small to permit using even a screw holding attachment. Phillips Screws stay on the driver tip, make it a trouble-free, one-hand job.

"FINE APPEARANCE OF PHILLIPS RECESS IMPROVES APPEARANCE, and contributes to smart, modern design that appeals to our customers."

A WEALTH OF ASSEMBLY INFORMATION is available to you in the full report of this independent investigator's findings at the Lionel plant. Send for this and other reports, on metal, wood, and plastic products. Use coupon.

Fastening motor base to structure of Lionel model 182 electric crane with Phillips Screws. One push with a spiral driver finds the thread and sends home the screw without driver skids, and assembly slow-down.

The small flush-type Phillips Screw in the eccentric pin on this Lionel locomotive shows how the ornamental Phillips recess adds to smart, realistic design.

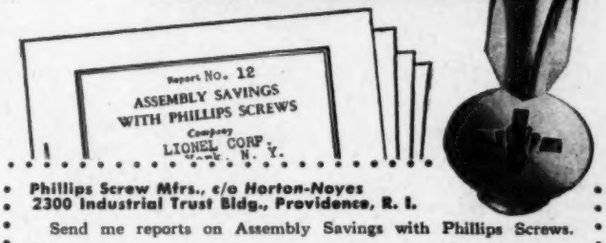
PHILLIPS *Recessed Head* SCREWS

Wood Screws • Machine Screws • Self-tapping Screws • Stove Bolts

American Screw Co.
Atlantic Screw Works
Atlas Bolt & Screw Co.
Central Screw Co.
Chandler Products Corp.
Continental Screw Co.
Corbin Screw Div. of American Hdwe. Corp.
The H. M. Harper Co.
International Screw Co.
Lamson & Sessions Co.

26 SOURCES

Milford Rivet and Machine Co.
National Lock Co.
National Screw & Mfg. Co.
New England Screw Co.
Parker-Kalon Corporation
Pawtucket Screw Co.
Pheoll Manufacturing Co.
Reading Screw Co.
Russell Burdsall & Ward Bolt & Nut Co.
Scovill Manufacturing Co.
Shakeproof Inc.
The Southington Hardware Mfg. Co.
The Steel Company of Canada, Ltd.
Sterling Bolt Co.
Stronghold Screw Products, Inc.
Wolverine Bolt Company



Phillips Screw Mfrs., c/o Horton-Noyes
2300 Industrial Trust Bldg., Providence, R. I.

Send me reports on Assembly Savings with Phillips Screws.

Name .....

Company .....

Address .....

..... P-12

You can See Quality IN CESCO SAFETY EQUIPMENT

The gently-resting comfort • bridge on CESCO spectacle goggles is an exclusive quality feature.

CESCO'S acid hood offers, among other outstanding features, Acitex material which resists the 5 most injurious acids.

The contour-molded, snug-fitting eye cups on CESCO goggles — a quality feature contributing greatly to wearer comfort.

The exclusive air-distribution tube in this CESCO welding helmet represents only one of its quality features you can see.

• Look at any CESCO product. In each you'll see features and workmanship that represent Quality.

Like the **comfort • bridge** on CESCO goggles, the texture of the acitex hood, the molded goggle cups, and the engineering details of the *Air-Flow* Helmet—each CESCO product has distinguishing quality features.

CESCO quality starts with the designing of a product. Quality is added during experimental and job-testing periods. And, quality is then manufactured into CESCO equipment through exacting attention to detail and expert workmanship.

Consider CESCO Quality when you buy safety equipment.

CHICAGO EYE SHIELD COMPANY
2320 Warren Boulevard
Chicago 12, Illinois

CESCO
FOR SAFETY

SELF POWERED CONVEYORS

MOTO-TRIMMER is the name of self-powered conveyor developed by the Bosworth Engineering Co., 6723 Denison Ave., Cleveland 2, Ohio, for all types of material handling from packaged products to sand and gravel, fuel and metal parts. Capacities of standard models range from 40 to 75 tons per hour. Conveyors will discharge materials up to height of six feet. Illustration shows endless cleated belt loader with adjustable loading chute which "will handle anything from 300 mesh material up to and including large size cartons." Power source optional.

COMPLETE AMMETER VOLTMETER LINE

COMPLETE new line of dc moving vane type ammeters and voltmeters with long, easy to read scales is announced by the U. S. Gauge Div. of American Machine & Metals, Inc., E. Moline, Ill. Pointer oscillation is said to be reduced to a minimum by new high torque lightweight USG movement. Dials have scale length of 80° of arc on center zero type, 60° of arc on zero off-center scales. The 80° type leads to greater accuracy, it is said. Numbers and graduations are lithographed on warp-proof metals dials.

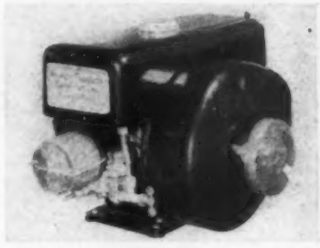
CONCRETE BRICK MACHINE

VI-BRIK-CRETE is the name of vibrating concrete products machine announced by the R. S. Reed Corp., 134 Hoffman St., Three Rivers, Mich. It is equipped with 7-brick multiple molding unit. Concrete brick made with the machine is said to have unusually high compressive strengths and low moisture absorption factor. Company claims that machine will produce 28 concrete bricks per minute. Electronic control allows operator to vary the amplitude of vibration, permitting wide range of mixes and aggregate selections.

MILL FOR GRINDING USES

THE Hy-Speed mill, designed for a wide range of grinding uses with more than a gallon-a-minute capacity, is announced by Morehouse Industries, Los Angeles, Calif. Model SB-1400 has interchangeable parts, dual bearing mounts and a 6-Spline coupling to its 20 hp motor. It measures 5' x 18", can be used on a wide variety of substances, and is adjustable while mill is in use.

ALUMINUM GASOLINE ENGINE

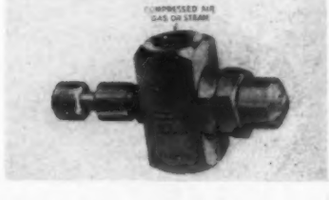


LIGHT-weight compact gasoline engine is announced by Power Products Corp., Grafton, Wis. The 1 hp engine, 8½" x 11" x 14½", weighs 16 lbs. The engine is of 2 cycle, air cooled design. Aluminum castings and stampings are used throughout except for piston rings, cylinder sleeve, crankshaft, bearings, etc. Gas tank capacity .4 gal.

STOPS RUST AND CAN BE PAINTED OVER RUST

AN industrial paint that can be applied directly over rusty surfaces without cleaning or scraping, said to prevent further oxidation and to provide an ideal base for decorative paints, is announced by Speco, Inc., Cleveland, Ohio. Rustrem (rust remedy) is a black paint claimed to seal rusty surfaces, stop rust permanently. It is recommended for use wherever metal must be protected regardless of submergence in water or exposure in moist or fume-laden atmosphere.

PNEUMATIC ATOMIZER NOZZLE

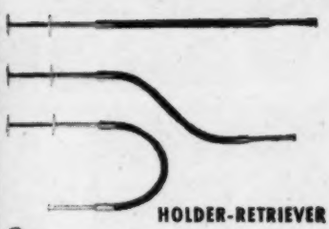


LARGE-capacity pneumatic atomizing nozzle for ½" pipe connections is announced by Spraying Systems Co., 4075 W. Lake St., Chicago 24, Ill. Capacities of 20, 40 or 60 gal. per hr. are provided. Nozzles are internal mixing type, operate with compressed air, although other gases or steam can be used. Made of brass or stainless steel, with or without shut-off needle.

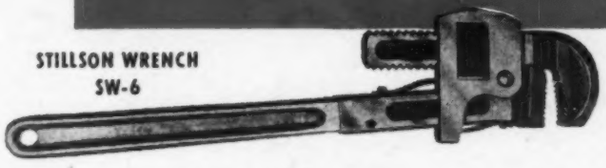
(*Turn to page* 174)

New Britain HAND TOOLS

ONE LINE COMPLETE FROM A TO Z



HOLDER-RETRIEVER
MH-15



STILLSON WRENCH
SW-6

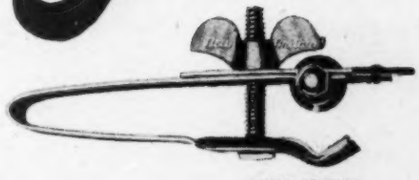
WRENCH SET
6524

From Adjustable Wrenches to Zerk Fitting Tools . . . here's the *complete* Line of Mechanics' Hand Tools for mill, shop and factory. It's the New Britain Line of guaranteed performance—a stock of widely varied Hand Tools, standard and special. Clever design helps speed production and ease your problems of plant and machinery maintenance.

The right Tool on the job saves time and effort. That's why it pays to look to New Britain for Hand Tools for every job. You'll find almost any Tool you'll ever buy in this one, great Line.

New Britain builds positive knuckle and job insurance into every Tool—no chance for slips, no sudden breaks. With famous Greater Strength—Better Fit you're sure of extra safety. Be sure to see this money-making, labor-saving New Britain Line. Ask your Mill Supply Jobber TODAY! The New Britain Machine Co., New Britain, Conn.

TOOL MARKER
TM-115-60



TUBE CUTTER
T-130

New Britain

The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

GREATER STRENGTH · BETTER FIT HAND TOOLS

HANDEE Reg. U.S. Pat. Off • TOOL OF 1001 USES

the LIGHT WEIGHT CHAMP

It's quick, it's deft, it's conveniently small, yet the Handee Tool packs a terrific wallop!

Handee is the original, single hand controlled, electrically driven tool — and it's the finest today. It can be used at the bench or carried right to the job. It reaches hard-to-get-at places on machinery, touches up perishable tools, grinds dies, chip breakers on broaches, removes burrs, etc. Runs at a cool 25,000 r.p.m. AC or DC. Wt. 12 oz.

Combined with its accessories and exclusive attachments, the Handee Tool performs more operations with greater accuracy than any other portable electric tool at any price.

PRECISION ATTACHMENTS. Fit Handee only. Offhand carving, routing, shaping is exact as to depth of cut, accuracy of line. Indispensable to pattern shop. Set of 6, postpaid, $7.95.

HANDEE KIT — Strong, compact steel carrying case holds the Handee Tool and a complete assortment of accessories. Postpaid, $27.50. Handee with 7 accessories only, $20.50.

GRINDS • DRILLS • CUTS
SAWS • ROUTS • POLISHES
ENGRAVES • CARVES • SANDS, ETC.

CHICAGO ACCESSORIES FIT ANY POWER TOOL

THE MOST COMPLETE LINE AVAILABLE

OVER 500 — ALL FINEST QUALITY

THE RIGHT ONE FOR EVERY JOB!

WRITE FOR 64-PAGE CATALOG

CHICAGO WHEEL & MFG. CO. 1101 West Monroe Street, Dept. PG, Chicago 7, Illinois

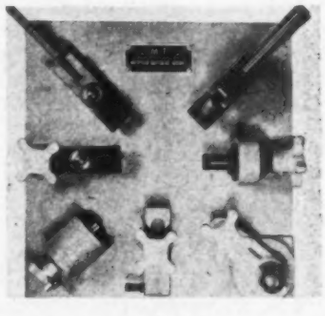
ROTARY SHACKLE LOCK

ILLUSTRATION shows rotary shackle lock which is made without springs or rivets, and which the maker states cannot jam. Shackle rotates, and strain is on the body and not on the locking piece. Master keys will operate a series of 75 Senior or 60 Junior locks, or any multiple thereof. Made of cold rolled steel; cadmium plated, brass inner workings. Available in two sizes: 2¼" dia. and 1¾" dia. Sterling Lock Co. 1301J South Third St., Minneapolis 4, Minn.

COOLANT PUMP AND TANK

PORTABLE coolant pump and tank with a flat machined flange that permits use on most wet machine tools is announced by Delta Mfg. Div. of Rockwell Mfg. Co., 600 E. Vienna Ave., Milwaukee 1, Wisc. Pump has capacity up to 30 gpm at low heads, will deliver water up to 2 gpm to a 14' head. ¼ hp motor is fully enclosed. Tank capacity is 16 gal.

JIG AND FIXTURE COMPONENTS



STRAIGHT, angle and wedge-screw designs, cam-type lever-operated units for work-holding requirements are included in line of jig and fixture components announced by Morton Machine Works, 2422 Wolcott St., Ferndale, 20, Michigan. Typical units are illustrated above. Each is available from stock in a range of sizes. Unit parts are made of heat treated alloy steel. Literature available.

(*Turn to page* 176)

INDUSTRY CALLS IT "PALLETIZING"

Palletizing is the modern method of handling materials in unit loads . . . a method that eliminates bottlenecks in shipping and receiving departments, and keeps goods moving with savings in time and handling costs. Much of the lifting, hauling and stacking is done by electric industrial trucks powered by Exides, the batteries that assure peak performance and full shift availability.

There are Exides for every storage battery need. Exides furnish safe, dependable motive power not only for the efficient, time-saving electric truck, but also for mine locomotives and shuttlecars. Exides supply power for many tasks on railroads, in ships and aircraft. They crank Diesel engines, provide power for emergency lighting, fire alarm circuits and central station operations. And on millions of cars, trucks and buses they continue to prove that "When it's an Exide, you start."

For 58 years, the name Exide has stood for dependability, economy, safety and long-life. Information regarding the application of storage batteries for any business is available upon request.

Exide
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

WASHERS
STANDARD AND SPECIAL

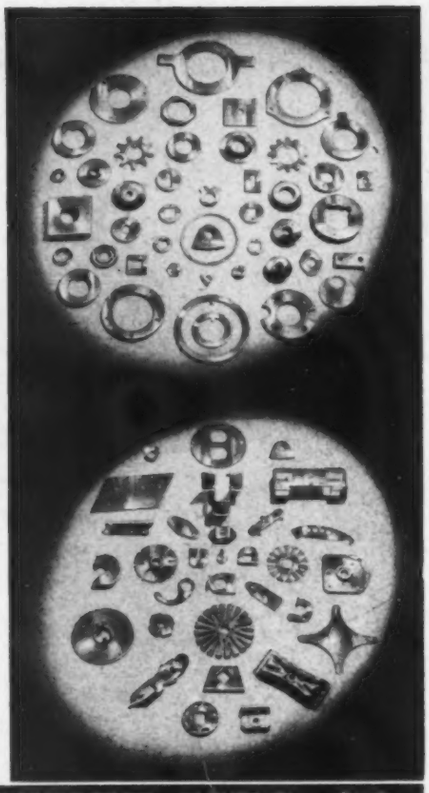
Every Type
Every Material
Every Purpose
Every Finish

Over 22,000 Sets of Dies

STAMPINGS
OF EVERY DESCRIPTION

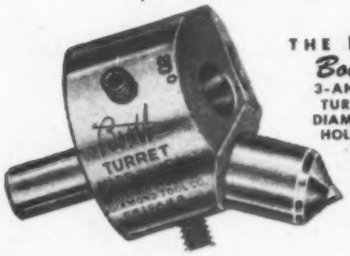
Blanking
Forming
Drawing
Extruding

Let us quote on your requirements.



WROUGHT WASHER MFG. CO.
THE WORLD'S LARGEST PRODUCER OF WASHERS
SOUTH BAY STREET • MILWAUKEE 7, WISCONSIN

WANT { BETTER GRINDING? / SHARPER DIAMONDS? / FEWER DRESSINGS?



THE NEW *Booth* 3-ANGLE TURRET DIAMOND HOLDER

Put the new Booth 3-Angle Turret Diamond Holder on that "finish" dressing job and see how it improves the cut of your wheel. See the automatic, self-leveling action maintain the diamond point at a fixed level with 30°, 20° and 10° drag angles. 3 drag angles give 3 cutting points—double diamond life—reduce re-sets. 3 Angles assure a sharp, clean-cutting diamond—make dressings accurate, improve grinding—save diamonds, save wheels, increase production.

Available on a rental basis of $2.00 per month, payable six months in advance. Rental includes Turret, Block, Adapter Rod, maintenance, repairs, and engineering installation service. Satisfaction guaranteed. (Give make, type and size of grinder when ordering). Specify Booth Turret equipment on your new grinders.

Loc-Key-Set Diamonds (Common 12.00 Carat, Medium 24.00 Carat, Select 48.00 Carat) mounted to fit Turret. Specify Carat size and Quality in ordering.

DIAMOND TOOL CO.
(Not Inc.)
Sheldon M. Booth, President
938 E. 41st St. Chicago 15, Ill.
Customers' Overnight Quarters

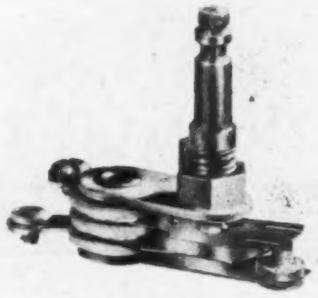
The
PURE OIL COMPANY
U.S.A.

A Complete Line of Industrial Petroleum Products

A Pure Oil engineer will help solve your lubrication problems. Write nearest office, or Industrial Lubrication Dept., Chicago, Ill.

Be sure PURE with Pure

ADJUSTABLE BI-METAL THERMOSTAT

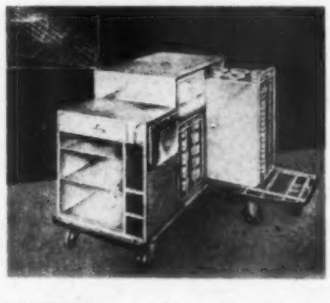


HIGHLY responsive adjustable bi-metal thermostat, especially designed for applications requiring close temperature control and long life, is announced by the Stevens Manufacturing Co., Mansfield, Ohio. Silver contacts are spot welded to the contact springs. Units can be supplied with either lava or mica insulation. Single through hole provides for quick mounting with screw or stud. Heating capacity is listed as 15 amps, 115 v, a-c.

HOT PROCESS WATER SAVER

NEW type of hot process water softener that incorporates a sludge blanket design is announced by Permutit Co., 330 W. 42nd St., New York City. Equipment is built in 4 models for use with every type of steam generator and is said to result in improved boiler feed water and savings in chemicals required for water softening. Further claims are that it reduces turbidity of softened water, lessens load on filters, reduces amount of backwashing and lowers amount of silica left in water. Softener has automatic desludging valve.

MOBILE CANTEEN



CANTEEN service cart, the Mealpack Mobile Canteen Model 83, that provides for compact storage and quick dispension of hot or chilled meals, is announced by Mealpack Corp., of America, 152 W. 42nd St., New York. When fully provisioned, canteen serves from 250-300 complete luncheons or dinners, including hot (or chilled) courses from pre-packed individual Mealpack containers, salads, pastries, ice cream, coffee, milk and soft drinks. Packed containers simplify loading, replenishing (see illustration).

(*Turn to page* 178)

DoALL "Backed Up" SAWING SERVICE

At your call—200 factory-trained engineers in 38 coast-to-coast Service Stations—one specifically assigned to you! These men don't stop with advice. They are working engineers who help you determine the correct cutting speed, saw pitch, temper, set, width, feeding pressure, etc., so important in machining today's many different materials.

This "on-the-spot" service is *backed up* by the DoALL Research Laboratories — largest of their kind. Here special tests that are beyond field facilities are made for you without charge. Here you get the last word in technical "know-how" on sawing because of day-to-day information on all modern materials developed by leading industries everywhere.

Don't hesitate to write for DoALL assistance.

- **200 FACTORY-TRAINED ENGINEERS**
- **38 COAST-TO-COAST SERVICE STATIONS**
- **DoALL RESEARCH LABORATORIES**

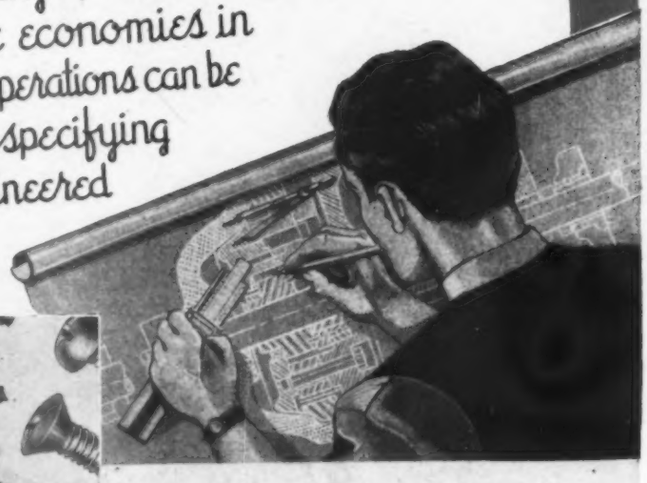
The DoALL Company

DoALL STORES IN PRINCIPAL CITIES

SMALL TOOL DIVISION
DES PLAINES, ILLINOIS

Fasten Tighter Stronger at Less Cost!

More than ever before, production economies must be emphasized in the design of new products. In addition to reducing labor costs, product performance must be improved. Greater strength, more enduring service and definite economies in assembling operations can be achieved by specifying "Holtite" engineered fastenings.



Man hours in assembling operations can be saved at the drawing board! The right fastening for each application, specified in the design of your new products or when re-designing old products, will reduce production time and costs. Keep a copy of the Continental Screw Company illustrated catalog in your Engineering Dept. It contains comprehensive fastening data, full listing of all sizes, dimensions, weights, diagrams, recommendations and other helpful information.

Cut Fastening Time 50%

Time study records show 50% and more saving in fastening time when HOLTITE-Phillips recessed head screws are used. Precision recess and mated tapered bit permit safe power driving, even on finished parts. Replace old screw driving method with this modern, cost-cutting fastening practice. Specify HOLTITE-Phillips.

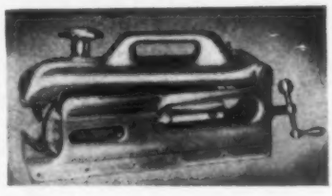
CONTINENTAL SCREW CO. New Bedford, Mass., U.S.A.

ALARM SYSTEM SIGNALS PROCESSING DANGERS

Signalling assembly and system that will sound an alarm when predetermined industrial processing temperatures, levels or pressures are reached, is announced by the Brown Instrument Co., Philadelphia, Pa. It is said that the new assembly will warn of excessive flow, pressure, temperatures or other factors which ordinarily are subject to manual control and human error. It is adapted to inherently dangerous processing, especially in the manufacture or use of highly explosive chemicals or elements. System, which is marketed under the name of "Air-O-Larm", is capable of providing either audible or visual warnings of undesirable or dangerous conditions.

PORTABLE METAL CUTTING SAW

Illustration shows new portable metal cutting saw made by Machine-Craft Manufacturing Co., 3805 Avalon Blvd., Los



Cuts any size or shape to 2⅜" O.D.

Angeles 11, Calif., which the maker characterizes as a perfect all-around tool for cutting off pipe, conduit and solid bars of ferrous or non-ferrous metal. It cuts any size or shape of stock to 2⅜" O.D.. and will cut flush and square to any wall or surface. Features include geared universal motor, high-speed steel blade, and vise-jaw with non-slip grip.

THE VALUE OF PIPE INSULATION

"Control of Industrial Heat and Power Losses" is the title of a new 20-page manual presented by the Industrial Mineral Wool Institute, New York City. Nine case histories, illustrated and described in full detail, cover a variety of typical situations in which piping, flanges, drumheads, driers, boilers, and other heated surfaces were figuratively dripping with wasted fuel-dollars until proper insulation confined the "hot money" within the power system. Calculations show that investment in insulation paid off in full savings in an average of about 8 months for coal, 5½ months for oil, and 4 months for gas. Descriptions and pictures of the various forms of mineral wool insulating are offered; also definitions, conditions, and formulae for determining heat-loss economies on many types of equipment. Material is supplemented by inclusion of a practical "Heat Loss Estimate Sheet" with complete instruction and necessary tables for its

(*Continued on page* 180)

USE SPRING LOCK WASHERS

TO DEFEAT RUST AND CORROSION

Rust . . . corrosion . . . deterioration of metal parts often means loose assemblies and breakdowns unless the bolt or screw is equipped with a spring lock washer.

***A spring lock washer,* like a Diamond G Lock Washer, will keep a constant tension between the bolt, the metal parts and the nut. Any loosening that may take place because of rust or corrosion is immediately taken up by Diamond G Controlled Tension.**

***Remember* there is only one *Diamond G Controlled Tension Lock Washer.* This exclusive tension quality is built into every Diamond G Lock Washer by precision fabrication and heat treating. It permits full tightening of bolt and screws, safeguarding against excessive vibration, shock and wear.**

***Next time* specify Diamond G's! For samples and full details on the new ASA and SAE specifications on spring lock washers just write to . . .**

GEORGE K. GARRETT CO., INC.
1421 CHESTNUT STREET, PHILADELPHIA 2, PA.
MANUFACTURERS OF

DIAMOND G PRODUCTS

LOCK WASHERS • • FLAT WASHERS • • STAMPINGS • • SPRINGS • • HOSE CLAMPS • • SNAP AND RETAINER RINGS

Used in
- INSTITUTIONS
- FACTORIES
- SCHOOLS
- OFFICES
- CAFES

LESS THAN 6c PER SQUARE FOOT

BIRD *Rubberlike**

RUNNER CUTS FLOOR UPKEEP COSTS!

Ideal Protection For Heavy Traffic Areas

Wherever constant foot-pounding batters busy floors, Rubberlike floor runner fills the bill for low-cost, durable protection. This modern composition product has rugged corrugations that cushion and quiet footsteps ... it's a cinch to clean, needs no special maintenance, can be put down in a jiffy without cementing. Won't curl at edges. Water doesn't make it slippery — a boon where splashings or tracked-in mud are safety hazards. Used in thousands of heavy traffic spots — hotels, factories, institutions, schools, offices, cafes. In rolls 27 in. by 100 ft. or 36 in. by 75 ft. Order from Supply House or write for free sample to Bird & Son, inc., Dept. 912, East Walpole, Mass. *Reg. U.S. Pat. Off.

BIRD & SON, inc., EAST WALPOLE, MASS., NEW YORK, SHREVEPORT, LA., CHICAGO

HALLOWELL

Ready-Made Work Benches of Steel

Fig. 732
Pat'd & Pat. Pen'd
Drawer is extra

- First choice of workers in shops and plants.
- Available in more than 1300 interchangeable combinations.
- Five different heights — seven standard lengths that can be bolted together to make almost any length.
- Smooth, splinter-proof tops.
- Sturdy All-Steel construction — can be moved, taken apart and rearranged conveniently, as could never be done with wooden benches.

"Unbrako" and "Hallowell" products are sold entirely through distributors.

STANDARD PRESSED STEEL CO.

JENKINTOWN, PA. BOX 590

Branches: Boston • Chicago • Detroit • Indianapolis • San Francisco • St. Louis

(*Continued from page* 178)

practical use in any given situation. A copy of the manual may be obtained without charge from the Industrial Mineral Wool Institute, 441 Lexington Avenue, New York 17, N.Y., or from any of the members and associate members of the organization.

LARGER INDUSTRIAL TRUCKS FORESEEN

Ultimate load capacities of electric propelled industrial trucks are limited only by the needs of industry, according to B. I. Ulinski, chief engineer, Automatic

15-Ton Fork truck handling sheet steel in rolling mill.

Division, Automatic Transportation Co., Chicago, who designed the 30-ton platform truck and the 15-ton electric fork truck shown in the accompanying illustrations. Mr. Ulinski states these are the largest of their type ever built. He is now drawing up plans for a 30-ton ca-

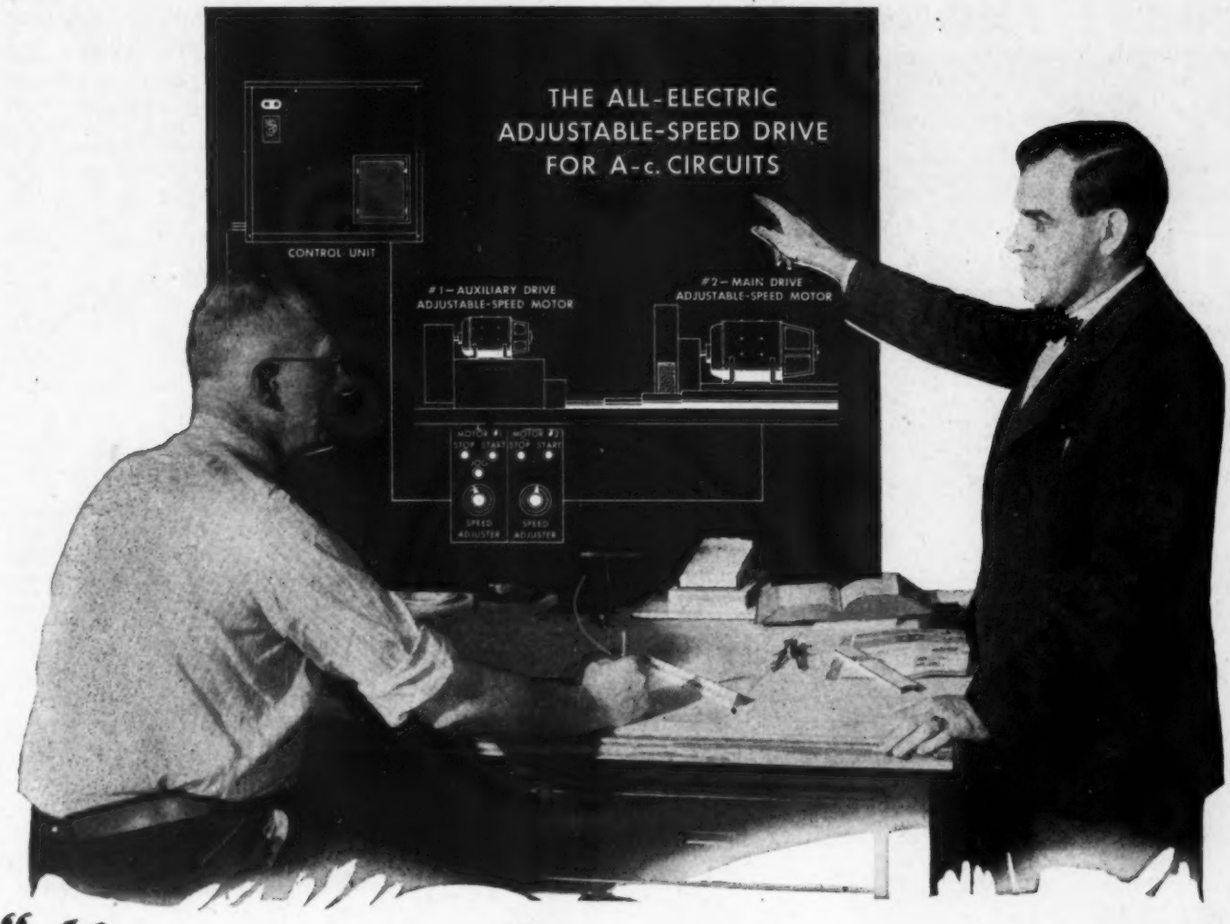
Low-lift platform truck used by Hudson Motor Car Company

pacity fork lift truck for the steel industry. The 30-ton electric platform trucks are equipped with motorized loading and unloading pins which automatically pull heavy dies onto the platform and slide them into place on forging machines.

NEW COMPOUND FOR STAMPING AND DRAWING

A new drawing compound has been perfected in the laboratories of The Texas Company. Called Texaco Drawing Compound No. 2, the new product is adapted particularly for use in stamping and drawing operations. This product, which has a pastelike consistency, is easily washed from a completed piece with water.

(*Turn to page* 182)



"Here's your Answer

TO UNLIMITED SPEED SELECTION!"

RELIANCE V★S DRIVE

Conveniently-packaged, space-saving V★S Drives are available from 1 to 200 horsepower.

Reliance V★S is the *All-electric, Adjustable-speed Drive,* which operates from *A-c. Circuits.* The flexibility it brings to machine operations can increase your production and cut your costs—as it has already done in thousands of installations. Here is the simplest, most efficient means of securing an infinite range of stepless speed changes from your plant's A-c. circuit for all processing jobs. Bulletin 311 will bring you more of the important facts about the V★S Drive. Write for it today!

RELIANCE ELECTRIC & ENGINEERING CO.

1056 Ivanhoe Road • Cleveland 10, Ohio

Appleton, Wis. • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Denver • Detroit • Gary • Grand Rapids • Greenville Houston • Kansas City • Knoxville • Los Angeles • Milwaukee • Minneapolis • New Orleans • New York • Pittsburgh Portland, Ore. • Rockford • St. Louis • San Francisco • Seattle • Syracuse • Tampa • Tulsa • Washington, D. C. Sao Paulo, Brazil

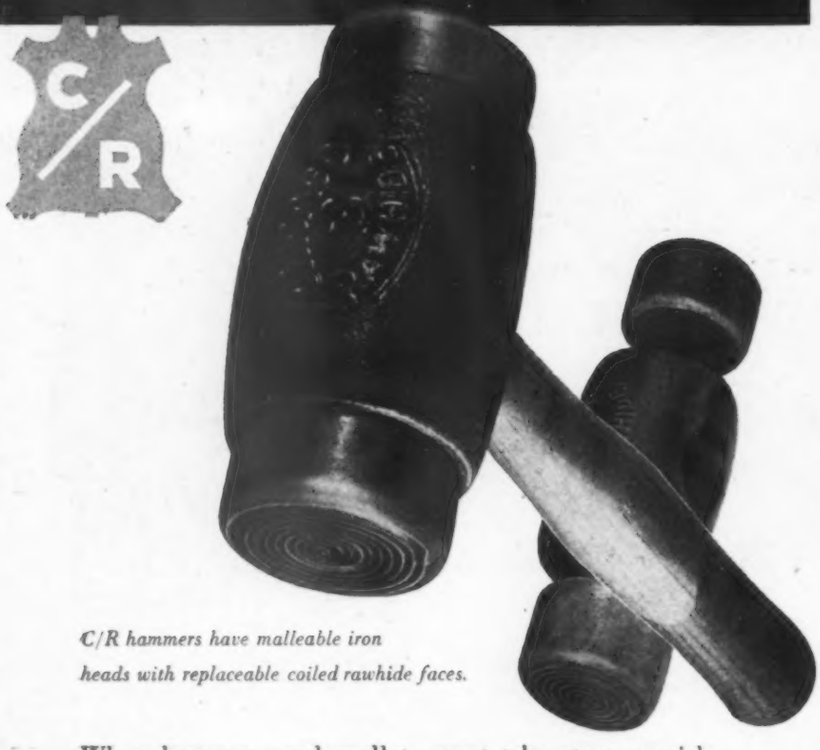
RELIANCE A-C D-C MOTORS

"Motor-Drive is More Than Power"

WHERE PRODUCTION COUNTS

Use Chicago Rawhide

HAMMERS and MALLETS



C/R hammers have malleable iron heads with replaceable coiled rawhide faces.

When hammers and mallets must take stern punishment in long, hard service . . . when they must give forceful blows with maximum protection to fine finishes and expensive machined parts...it will pay you to insist on *Chicago Rawhide.* Made from tough, resilient, carefully selected hides, C/R hammers and mallets won't crumble, split, mushroom or erase, and they hold their true striking surfaces. Rawhide protects . . . Chicago Rawhide protects most.

CHICAGO Rawhide MFG. CO.

1203 ELSTON AVENUE · CHICAGO 22, ILLINOIS

ECONOMIES IN MELTING-CASTING MOLTEN ALUMINUM

Aluminum processing temperature measuring equipment announced by the Brown Instrument Co., Philadelphia, is said to make for more accurate control and appreciably large economies in melting and casting molten aluminum. The equipment consists of a new assembly that is said to be resistant to attack by molten aluminum. The device is described as "a thermocouple for molten aluminum pot temperature measurement." It contains a silicon carbide protecting tube which it is claimed will out-perform cast iron in durability.

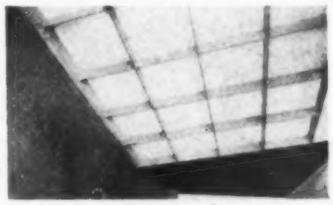
UNIQUE USE OF PLASTICS IN PLASTICS DESIGNER'S OFFICE

A novel design for fluorescent lighting has been effected by William B. Petzold, industrial designer for the General Electric plastics divisions, in his new office at One Plastics Avenue, Pittsfield, Mass.

Interior of the office

Petzold utilizes an egg-crate pattern of a blue-gray walnut dropped about two feet from the ceiling and covering approximately three-fourths of the room. Each 24" module is covered by panels of a G-E translucent laminated plastic material which gives an even distribution of light without any semblance of glare.

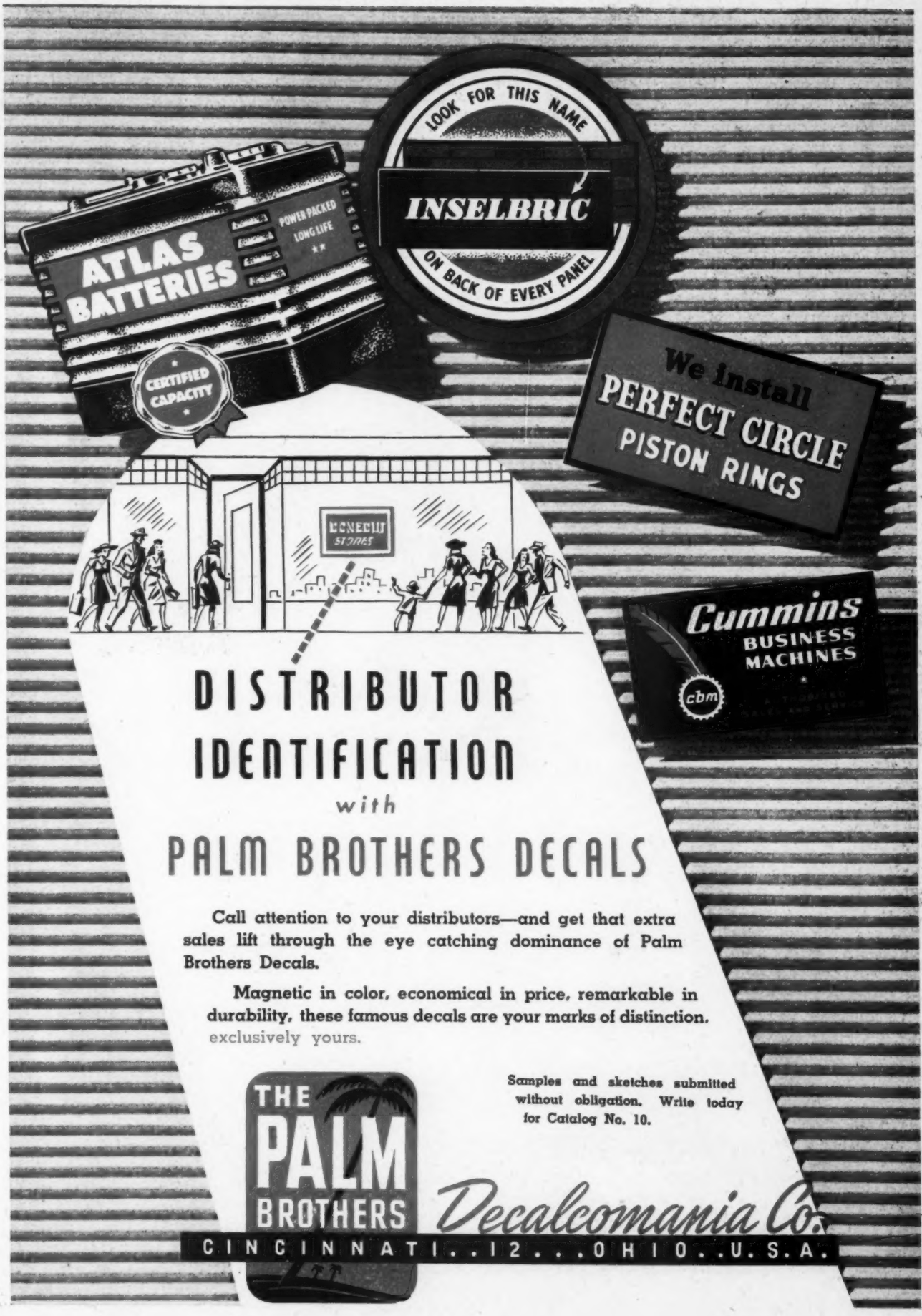
The G-E plastic material is produced in thickness from .020" to .060" in sheets up to 18" by 108". The material may be



Egg-crate pattern of ceiling drop. Each module is covered with translucent plastic

formed in a large variety of shapes which are limited to the use of generous radii for all bends. The material is light weight, flexible and has low light absorption. For example, a sheet .020" thick has 70% light transmission, 28% reflection and 2% absorption.

The upper picture shows a portion of Mr. Petzold's office, with sofa covered with a black Vinylite plastic and chairs webbed of the same material. Door pull of Lucite is fashioned from designer's initials.


ATLAS BATTERIES
POWER PACKED
LONG LIFE
CERTIFIED CAPACITY
LOOK FOR THIS NAME
INSELBRIC
ON BACK OF EVERY PANEL
We install
PERFECT CIRCLE
PISTON RINGS
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IDENTIFICATION
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PALM BROTHERS DECALS
Call attention to your distributors—and get that extra sales lift through the eye catching dominance of Palm Brothers Decals.
Magnetic in color, economical in price, remarkable in durability, these famous decals are your marks of distinction. exclusively yours.
Samples and sketches submitted without obligation. Write today for Catalog No. 10.
THE PALM BROTHERS Decalcomania Co.
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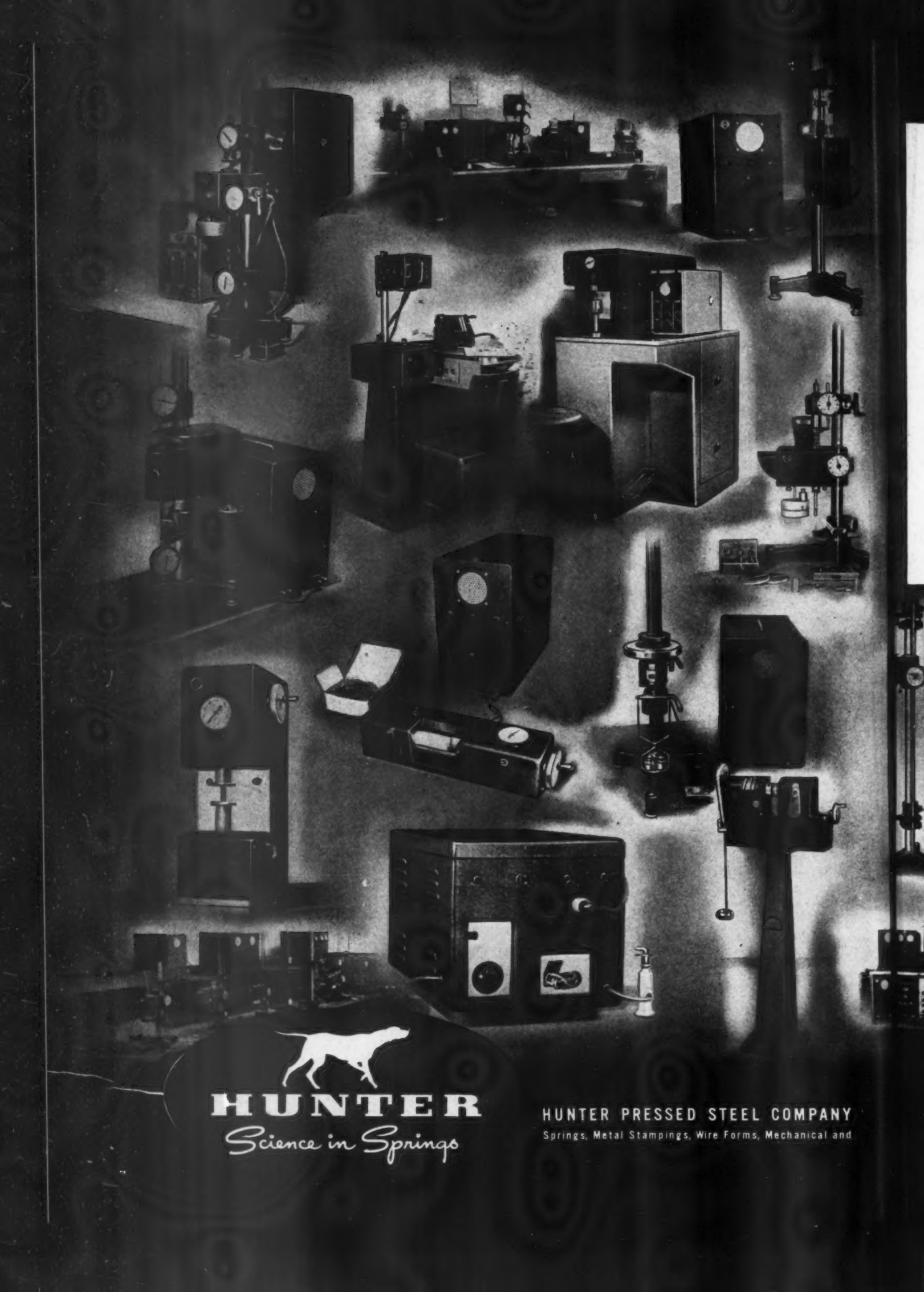

HUNTER
Science in Springs
HUNTER PRESSED STEEL COMPANY
Springs, Metal Stampings, Wire Forms, Mechanical and

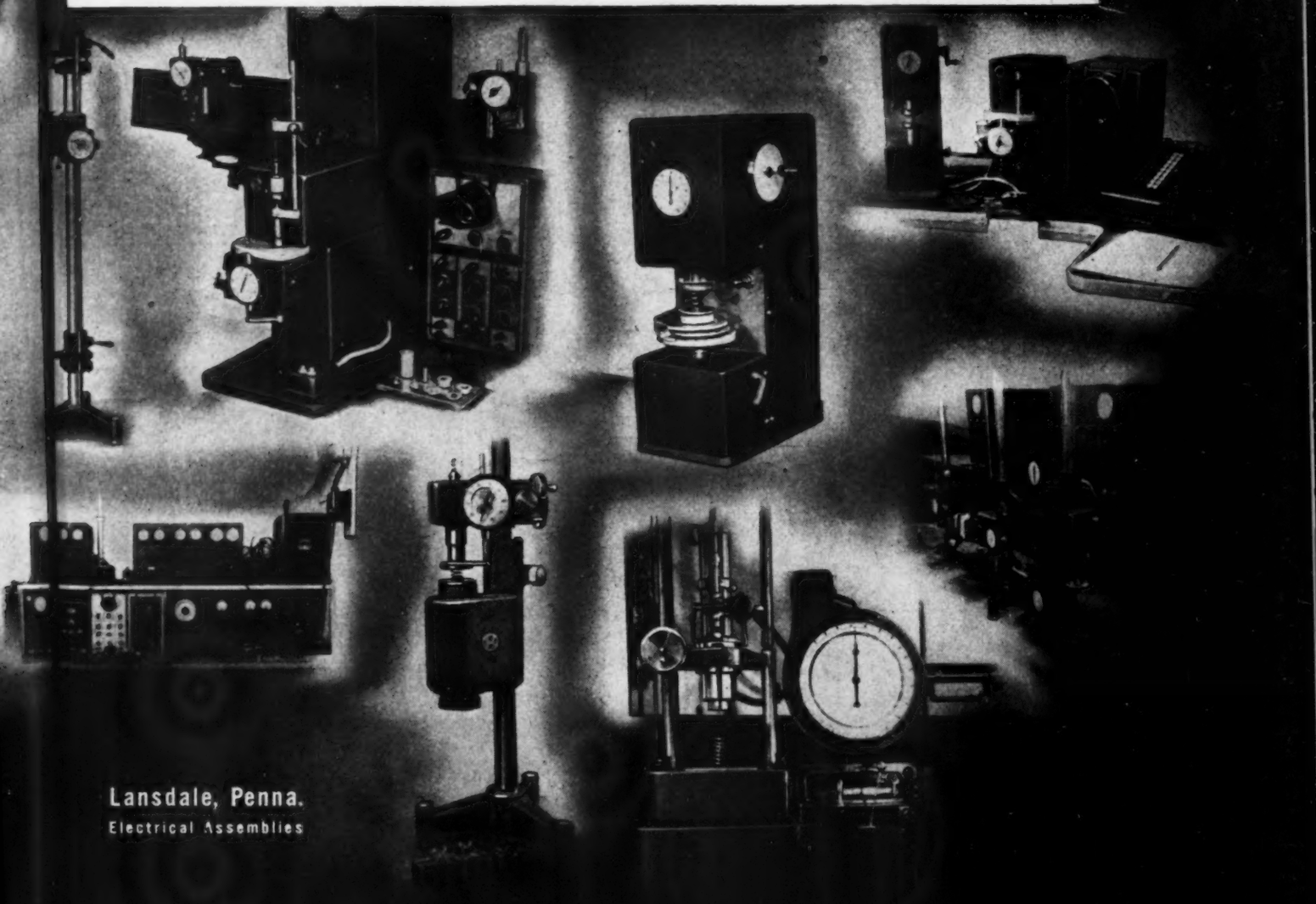
All this to test Springs?

PEOPLE who follow our advertisements or pop in on us at Lansdale often say, "Why so much equipment just to test a spring?" Good question!

Making and testing a few springs is one thing. Making and testing hundreds, thousands or millions of springs is something else again. A very different something else if you want the kind of springs that can breeze by close specifications.

In order to implement our statistical control of quality (so effective in insuring better springs) . . . in order to give you springs that really meet tolerances and to *know that we know* they are right . . . we found it necessary to conceive, design and then even to build our own testing machines.

We show you a few of the machines on these two pages, some mechanical, some electronically operated.



Lansdale, Penna.
Electrical Assemblies

Yes...

SOMETHING CAN BE DONE ABOUT RISING COSTS OF MANUFACTURE

Hand operations *can* be speeded up by the right tools. Seconds of time can be *saved* with a tool that does the job quicker, or serves where two or more tools were required before.

PLIERS THAT ARE WRENCH AND CUTTERS AS WELL

BERNARD Parallel Action PLIERS (#402—6"). Jaws close parallel like a vise. Cutters on *outside* of head for easy, quick use. Compound leverage action *for greater power.*

CUTTING NIPPERS, WITH SPRING ACTION, THAT REDUCE HAND FATIGUE

BERNARD Diagonal Cutting Nippers (#177—5½"). Spring action and compound leverage reduce hand fatigue in repetitive operations.

LIGHT METAL SNIPS THAT CUT CURVES IN BOTH DIRECTIONS

BERNARD Metal Snips (#388—10¼") have spring action and compound leverage. Blades bevelled to cut curves in either direction.

Order these or other BERNARD hand tools from your Mill Supply distributor.

For complete information on BERNARD line of pliers, nippers, cutters, punches send for catalogue. Please use coupon.

BERNARD

TOOLS MADE REGISTERED

Wm. Schollhorn Co., New Haven 9, Conn.
"Quality Tools Since 1870"

Wm. Schollhorn Co.
6012 Chapel St., New Haven 9, Conn.

Sirs: Please send me your free catalogue of hand tools for industrial use.

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CITY_____ STATE_____

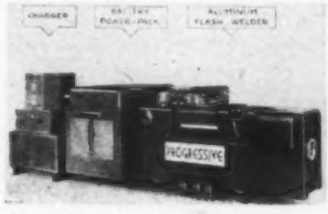
Our Mill Supply source is_____

BACKLOG OF DEMANDS

"The hint that business generally has overestimated the backlog of demands for all products is becoming increasingly stronger," comments Public Relations News of the Indiana Lumber and Builders Supply Association. "Dramatic illustration is furnished by one of the big household equipment manufacturers. One metropolitan dealer who had been crying for washing machines received two. He had to notify 13 priority holders before he found one ready to take delivery. Automobile dealers have also been reporting rejections when the customer learns the complete particulars surrounding the purchase of a new car."

BATTERY POWERED WELDER FOR FLASH WELDING ALUMINUM

New storage battery powered flash welder designed and developed for the flash welding of aluminum, is announced by the Progressive Welder Co., 3050 E. Outer Drive, Detroit 12, Mich. Stored



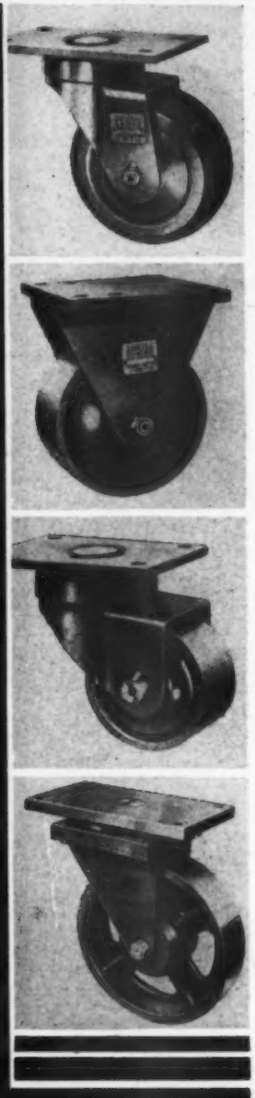
energy machines have the ability to provide high weld current rates with a considerable lower line load than required for a-c machines. Of three basic types of stored energy machines—magnetic, condenser discharge, and battery powered—only the battery type lends itself to flash welding since flash welding demands continued current flow rather than a single "shot" of short duration as provided in the other types. Machine is said to be far less critical as to control requirements when welding light metals than are a-c machines. The machine may be installed anywhere there is adequate power supply to operate a 10 or 15 hp 3-phase motor.

STEEL STRANDS USED TO REINFORCE TIRE CASINGS

Fine steel wires, .0059 inch thick, are being produced by the American Steel and Wire Co., U. S. Steel subsidiary, to form the plies or layers of material which are saturated with rubber and form the inner core or body of the tire. The wires are twisted into a strand, six strands being laid around a central core to form a cord 1/32" in diameter. The cords are placed parallel to each other, coated with rubber, producing a ply of extreme strength and resistance. Four metallic plies are said to be the equivalent in strength and durability of approximately 20 fabric plies commonly used in heavy-duty tires. The metal sheath thus formed is highly resistant to punctures, bruises and blow-outs. At the same time the

(*Continued on page* 188)

DARNELL CASTERS



SAVE TIME....

SAVE FLOORS....

SAVE EQUIPMENT....

DARNELL CORP. LTD.
LONG BEACH 4, CALIFORNIA
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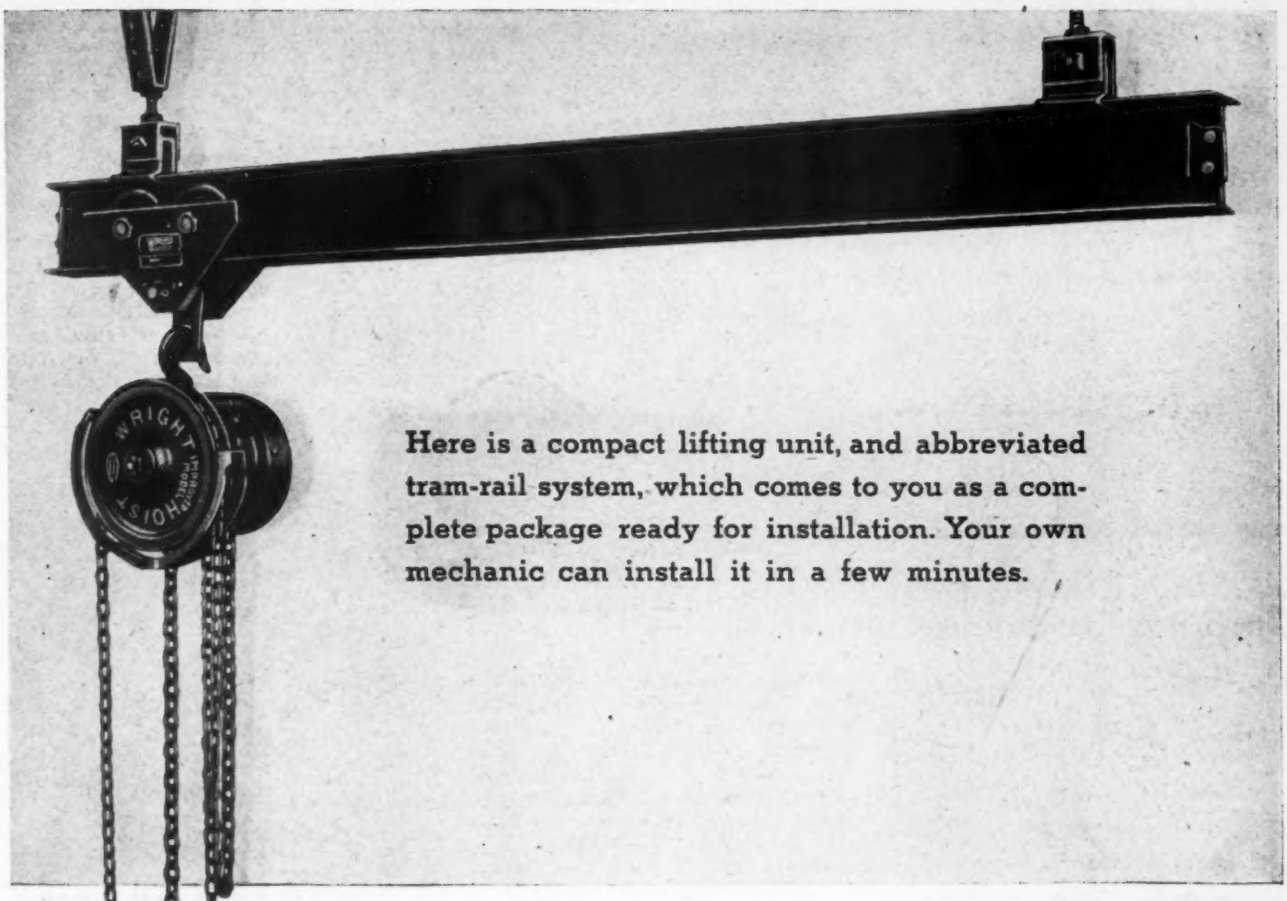
WRIGHT *HOIST UNIT*



Here is a compact lifting unit, and abbreviated tram-rail system, which comes to you as a complete package ready for installation. Your own mechanic can install it in a few minutes.

This Wright hoist unit consists of an Improved High-Speed hoist, a Self-Aligning Roller Bearing trolley, 15 feet of I-beams with end stops, and two Utility universal hangers.

It is speedy, convenient, indispensable in the garage, receiving or shipping room, or any place where loads must be moved a short distance. Capacities: ¼ to 2 tons. Ask your local Wright distributor (see metropolitan classified telephone book).

ACCO

TRADE MARK

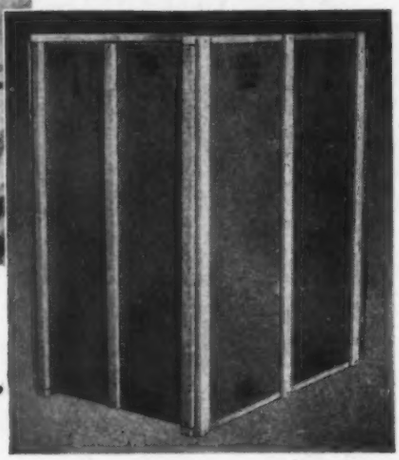
York, Pa., Chicago, Denver, Los Angeles, San Francisco, Portland, New York, Bridgeport, Conn.

WRIGHT MANUFACTURING DIVISION
AMERICAN CHAIN & CABLE

In Business for Your Safety

THE CONTAINER IS "PART OF THE PRODUCT"

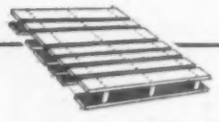
...NATURALLY



GENERALLY.....

NEW "GENERALIFT" PALLETS

Millions of pallets were used by the armed forces. They saved from 50% to 90% in materials handling. We are now in full production of pallets for all industry. Our engineers will design a pallet best suited to your specific needs. Write today for Pallet Book.



"Generalift" Pallet

General Corrugated Box

Look to the Lobster

for perfect product protection . . . and look to General for engineered shipping containers that are also a "Part of the Product."

They're laboratory designed for the better, more economical shipment of today's modern products. *Better* because they're compact and often reinforced with blocking and interior protection. More *economical* because they're lightweight and quickly and easily assembled. Result: conservation of space, saving of shipping costs and man-hours, and speeding of production.

Our engineers are broadly experienced in the design of shipping containers for all types of products. They will also be glad to help you design a shipping container that is really worthy of *your* product . . . that is actually a "part of *your* product."

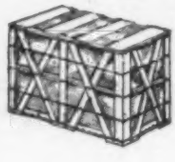
Write today for more information on this important subject. Remember, don't just put it in a box . . . put it in a General Engineered Shipping Container.

Write today for your free copy of booklet on GENERAL'S *"Part of the Product" Plan.*

General All-Bound Box

General Nailed Box

General Cleated Corrugated Container



General Wirebound Crate

ENGINEERED SHIPPING CONTAINERS

General BOX COMPANY

GENERAL OFFICES: 48 W. Illinois St., Chicago 10, Ill.

DISTRICT OFFICES AND PLANTS: Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon.

Continental Box Company, Inc.: Houston, Dallas.

(*Continued from page* 186)

thinner structure provides greater resiliency and eliminates the creation of a large amount of heat. The metal core ply also eliminates casing stretch.

The wire used is extremely high grade with tensile strengths ranging from 325,000 to 400,000 psi. It lends itself to numerous other uses such as reinforcement of V-belts, power transmission belts and conveyor belts.

RICHARDSON BAG CLOSER AGAIN AVAILABLE

Richardson Scale Company, Clifton, New Jersey, announces reestablishment of its Richardson Bag Closer production lines, which were discontinued because of material shortages during the war. Again they have appointed the Bemis Bro. Bag Co., with its many strategically located branches and sales offices throughout the country, as exclusive distributor of this 100% portable machine.

The bag closer weighs but eight pounds

No motor or electric power is necessary in operating the Richardson Bag Closer—it functions as a friction drive. As the Richardson Bag Closer is drawn across the bag, friction rollers rotate on double-row, felt-sealed ball bearings, which require no lubrication and transmit power to the needle through a train of gears operating on oilless bearings.

The case is sturdy but light in weight—the complete machine weighs only 8 pounds—and is made as an aluminum die casting with a highly polished mirror-finish which prevents the collection of dust.

ALL-ALUMINUM BRIDGE SPAN

What is said to be the first all-aluminum span in history was installed recently on the Grasse River bridge of the Massena Terminal Railroad at Massena, N. Y. Bridge was designed by the Aluminum Company of America, and fabricated by the Bethlehem Steel Company at Rankin, Pa. The bridge is built entirely of aluminum alloys. The span is 100 feet long and weighs 53,000 pounds as compared to 128,000 pounds for similar steel spans.

(*Turn to page* 192)

and one that Requires Less Changing

BAYFLEX RAISED HUB DISC WHEELS

are outwearing coated abrasive discs on thousands of jobs. This is really good news for foundries, welding shops, sheet metal shops, automobile and truck body repair shops, or wherever grinding and polishing of any type of welded or brazed metal is a problem.

ADVANTAGES:

1—Flat surface and edge can be used for grinding. Edge can also be used for cutting off.
2—Excellent for grinding aluminum castings.
3—No "loading" under normal conditions.
4—Unexcelled for grinding into grooves and corners, and large radii on castings.
5—Will fit any standard machine using coated discs.
6—Bayflex discs, unlike coated discs, can be used efficiently right down to the nut. This means time and money saved.
7—Available in a variety of abrasive grit sizes.

A trial will prove their worth. Write for bulletin for further information.

Branch offices and warehouses — Chicago — Detroit. Distributors — All principal cities.

BAY STATE

Top Performance Consistently Duplicated

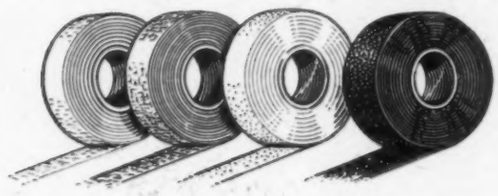
BAY STATE ABRASIVE PRODUCTS CO. • WESTBORO, MASSACHUSETTS, U.S.A.

enemy:

Particles of grit and moisture, creeping into diesel and gasoline engines during shipment, can cause havoc later.

defense:

Bauer & Black Industrial Adhesive Tapes provide effective barrier against dirt, water vapor . . . in engine openings.



victory:

Sealed with Industrial Adhesive Tape, this Buda engine will reach consignee free of foreign abrasives and moisture.

THE BUDA CO., of Harvey, Ill., took no chances on letting grit and moisture ruin a fine product. A Bauer & Black Technical Consultant was called in for help with the problem. His solution—airtight sealing of all intakes, exhausts and spark-plug holes. The Bauer & Black Industrial Adhesive Tapes chosen (Nos. 133, 101, 214 and 223) did a neat, quick job of protecting Buda gasoline and diesel engines, insuring future performance.

NEED A LIFT?—YOU CAN GET IT FREE

Bauer & Black experience, gained in working with engineers in hundreds of industries, is at your disposal, *free*. If a pressure-sensitive tape might take the kinks out of your production line, improve your product or save you money, a Bauer & Black Technical Consultant will be glad to help you work out the details. To have him call, write Dept. 212 today. Ask also for our **FREE** monthly *Automotive News Letter*.

Products of

BAUER & BLACK

Division of The Kendall Company • 2500 S. Dearborn St. • Chicago 16

Industrial Adhesive Tape

PRESSURE SENSITIVE

Production Short Cuts to Reduce Costs • Research to Speed and Improve Methods

MAN'S ABILITY TO PRODUCE IS LIMITED ONLY BY THE SUBSTANCES HE USES

EXPLORING WITH SIRVENE—opens new frontiers in product development

When new product designs are stymied by extraordinary protection or sealing problems, Sirvene engineers can help you work out the answer. Proceeding beyond established formulae, they develop a new Sirvene compound for each application and design a new pliable part which will meet difficult operating conditions.

Every possible combination of oil resistant elastomers is explored in the production of Sirvene mechanical pliables. Manufactured under strict laboratory control and subjected to constant tests for uniformity, each Sirvene part possesses the proper degree of elasticity or hardness; will maintain dimensional stability in contact with water, oil, gasoline and other solvents; and remain flexible in extremes of heat or cold, as performance specifications demand.

Sirvene's vast laboratory, research and production facilities are always at your disposal when you need unusual pliable parts.

ENGINEERS ARE INVITED to write for a copy of "Engineering with Sirvene" . . . Gives basic information about the development of Sirvene and what it can do for you. You may have a copy by writing SIRVENE DIVISION, Dept. 1203 . . . FREE

SIRVENE

THE *SCIENTIFIC* COMPOUNDED ELASTOMER

A Product of the Synthetic Rubber Division

CHICAGO RAWHIDE MANUFACTURING CO.

1305 Elston Avenue Chicago 22, Illinois

New York · Philadelphia · Detroit · Los Angeles · Cleveland · Boston
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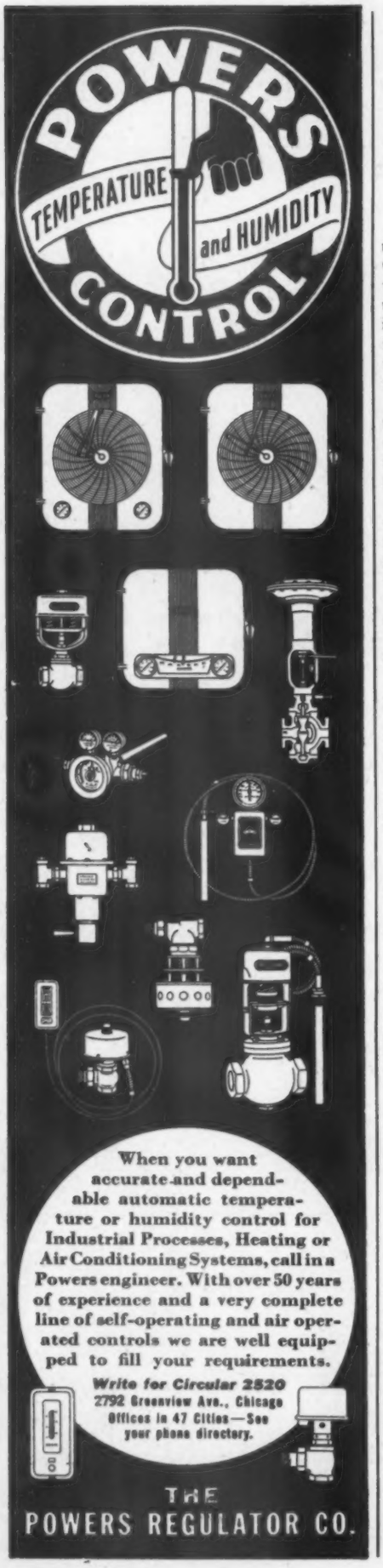
Sirvene Engineers are pioneers in the field of scientific compounded elastomers. Since 1929, they have acquired an unequalled background of research, development and manufacturing experience. This unique reservoir of experience is always at your service.


POWERS
TEMPERATURE and HUMIDITY
CONTROL
When you want accurate and dependable automatic temperature or humidity control for Industrial Processes, Heating or Air Conditioning Systems, call in a Powers engineer. With over 50 years of experience and a very complete line of self-operating and air operated controls we are well equipped to fill your requirements.
Write for Circular 2820
2792 Greenview Ave., Chicago
Offices in 47 Cities—See your phone directory.
THE
POWERS REGULATOR CO.

New Cellulose Derivative Announced by Hercules

Water-soluble but can be made water insoluble; Adhesive but not sticky; Forms tough films; Insoluble in organic solvents; Relatively non-hygroscopic; Emulsifying Agent; Many other Properties

Hercules Powder Company has announced the commercial manufacture of CMC, a new cellulose derivative. This water-soluble cellulose gum has such a unique combination of properties that in a short time it has found application in a wide variety of industries including textile, paper, paint, lacquer, ceramics, rubber, cosmetics, and printing.

This unusual cellulose gum possesses many properties of water-soluble starches, gelatins, and gums, as well as the additional qualities found in processed or synthesized hydrophillic colloids.

Hercules CMC is the sodium salt of carboxymethyl-cellulose formed by the reaction of monochloroacetic acid with alkali cellulose and is available in three viscosity types:

Low-25 to 50 cps. at two per cent concentration

Medium-400 to 600 cps. at two per cent concentration

High-Approximately 2000 cps. at one per cent concentration

Unlike many chemicals whose uses are circumscribed by specific property limitations, the applications of CMC continue to multiply as chemists study its unique combination of properties and discover new uses for them.

Properties

Included among the many properties which make this cellulose gum so interesting and suggest many industrial uses are the following:

It is water-soluble yet it can be made relatively water insoluble; CMC is adhesive but not sticky; it is insoluble in organic solvents; CMC forms tough films; CMC not only acts as an emulsifying agent in oil-in-water emulsions but it also protects the emulsion.

CMC greatly increases the viscosity of water and it is also possible to carefully control the viscosity of any solution in which CMC is used; CMC is relatively non-hygroscopic both in solution and film; CMC is compatible with many water-soluble materials such as gums, plasticizers, and resins; CMC presents no fire hazard as it chars only at temperatures above 235° C.

Industrial Applications

CMC's ability to increase and control viscosity of water, plus excellent film-forming properties, have resulted in several applications. In textile manufacture it is used in sizes and finishes, as well as for printing pastes, where it is added to the color box.

CMC can also be used in ointment bases, in the thickening of rubber latex, in can-sealing compounds, and for greaseproof coatings for heavy stock papers and paperboards.

As an emulsion stabilizing or suspending agent, this cellulose gum is extremely useful in lotions and other cosmetics, in tooth paste, and in many types of oil-in-water emulsions.

Its stabilizing and film-forming properties make it ideal for use in emulsion paints and lacquers where it also aids in pigment dispersion.

While CMC is not solely an adhesive, it can give adhesive or binding properties for special purposes. For instance, in leather pasting or in preparation of ceramic glazes, where a modified adhesive is needed, CMC provides the required adhesion, yet is easily washed off.

In crayons and lead pencils, CMC acts as a flexible binder that reduces breakage. It is also used in book binding and for other similar modified adhesive applications.

Although this cellulose gum has been known to Europeans for many years as sodium cellulose glycolate, little of it has been made in the United States until recently.

METCO METALLIZING HANDBOOK

Complete collection of technical and operating data on the Metallizing Process is contained in Fourth edition of Metco Metallizing Handbook, announced by the Metallizing Engineering Co., Inc., Long Island City 1, New York. In addition to data on preparation of surfaces, metallizing technique and finishing procedure, the handbook contains data on corrosion resistance, specific gravity, hardness, bond strength, tensile strength and relative shrink.

Profusely illustrated with pictures, drawings, diagrams, charts and graphs; 86 pages; price $2.00.

ELECTRIC STEAM BOILER

Boiler which utilizes electricity to generate steam for pressures up to 200 pounds per square inch and in volume up to two boiler hp, is announced by the Livingstone & Co., 89 Broad St., Boston, Mass. Statement is made that until now the development of electrically heated boilers has lagged due to the cost of heating elements, their susceptibility to damage from low water and the cost of large diameter vessels necessary to hold them. The Livingstone Speedylectric steam boiler, it is claimed, overcomes these objections by employing solid rods for

(*Continued on page* 196)

LADISH

Controlled Quality

...WHAT IT MEANS IN GREATER DEPENDABILITY AND LONGER SERVICE FROM PIPING SYSTEMS

Controlled Quality is the distinguishing feature of every product in the complete Ladish line. Seamless Welding Fittings, Forged Steel Fittings and Forged Steel Flanges . . . all are produced under exacting metallurgical control and rigid inspection of physical dimensions.

Ladish Controlled Quality . . . made effective by one of the most modern and completely equipped metallurgical engineering laboratories in the industry . . . provides complete determination of chemical composition and physical properties of steel together with constant application of proper forging procedures and heat treating.

Thus users of Ladish Fittings and Flanges obtain higher dynamic strength . . . greater toughness . . . and increased resistance to shocks, strains and stresses common in piping installations. Advantages resulting from Ladish Controlled Quality provide the ultimate economy of longer life and greater dependability.

A COMPLETE LINE PRODUCED UNDER ONE RESPONSIBILITY

Ladish catalogs, to assist in the design of piping installations and the proper selection of fittings and flanges, will be supplied upon request.

TO MARK PROGRESS

Controlled Quality

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LADISH DROP FORGE CO.

CUDAHY • WISCONSIN (MILWAUKEE SUBURB)

District Offices: NEW YORK • BUFFALO • PITTSBURGH • CLEVELAND • CHICAGO • ST. LOUIS • HOUSTON • NEW ORLEANS • LOS ANGELES

We're not "Devil-may-care"

... and the devil on the right is proof of *that!* He's composed of a number of different plastic parts made by Continental. He has a plastic gearshift knob for a head. And his horns and tail are plastic handles. In fact, with every part of him goes a plastic success story.

Working with experienced care, our staff of designing and research experts solve "pernickety" product problems. The plastic parts or accessories, themselves, have all those qualities one expects in a plastic . . . lightness, strength, durability, and economy.

Remember, you can always depend on Continental's engineering "know-how". So whenever you think of plastics, be sure to remember Continental.

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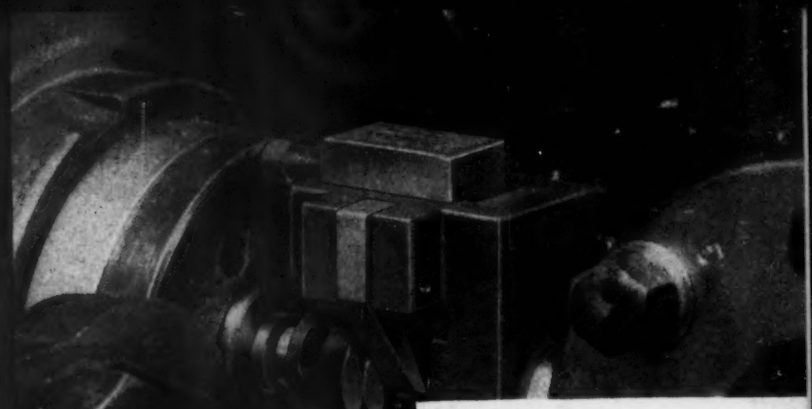
CAN COMPANY, INC.

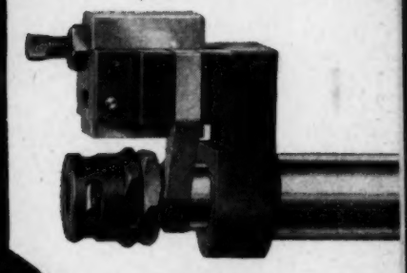
HEADQUARTERS: Cambridge, Ohio
Sales Representatives in all Principal Cities

COMPRESSION • INJECTION

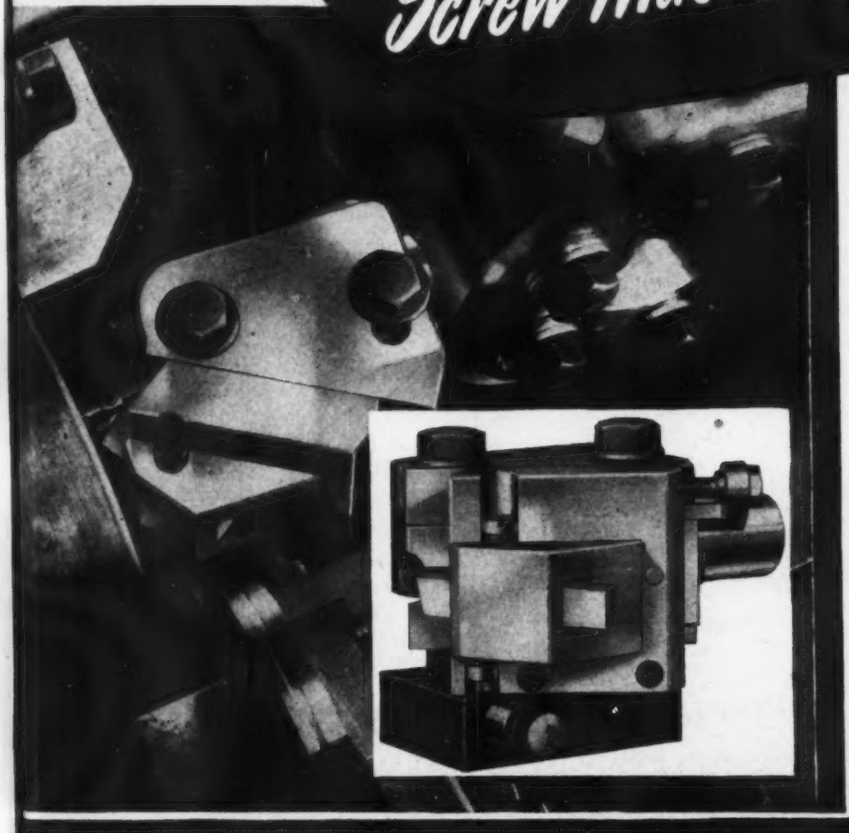
FOR CUTTING FINE THREADS CLOSE TO A SHOULDER

Use No. 00GA RELEASING DIE HOLDER FOR "ACORN" DIES . . . a highly efficient tool designed for use where a small, fine pitch thread is to be cut and held to a definite length, as when threading close to a shoulder. An adjustable screw on the front of the holder governs the length of the thread automatically – independently of the reversal of the spindle. When the screw contacts the edge of the front box nut over the nose of the spindle, the forward movement of the die stops. Embodied in design of this tool are provisions that permit die to back off the work when spindle is reversed.





Two Special-Purpose Tools That Step-Up Screw Machine Production



FOR TURNING TAPER ON END OF WORK ADJACENT TO THE CHUCK

Use BROWN & SHARPE ANGULAR CUTTING-OFF TOOLS to turn a clean, sharp tapered point or cone with single point tool on work requiring pointing adjacent to the chuck. Tool severs the piece from the stock when cut is complete. These tools may also be used internally for chamfering. Brown & Sharpe Mfg. Co., Providence 1, R. I., U. S. A.

Whatever your screw machine operations, you can turn out better work — faster — with Brown & Sharpe Screw Machine Tools!

B·S

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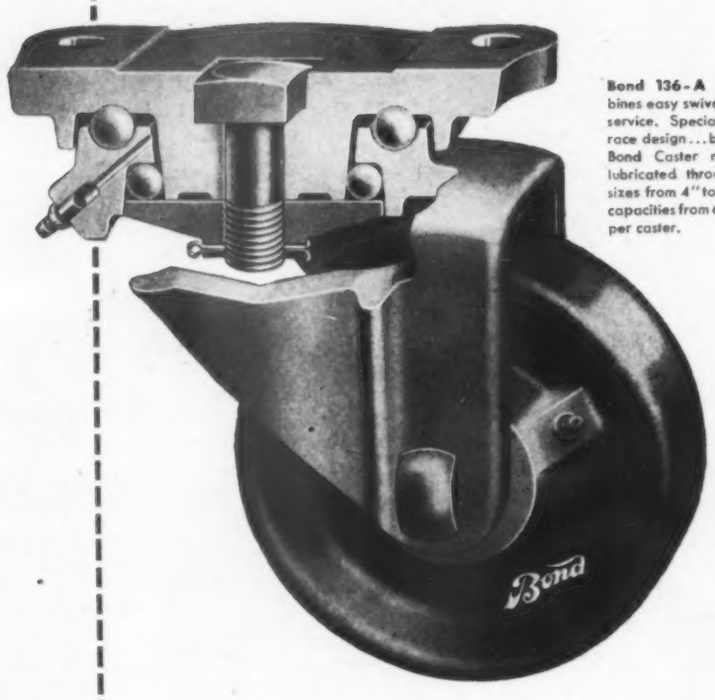
BROWN & SHARPE



Bond 136-A Caster. Combines easy swiveling with long service. Special double ball race design... built of durable Bond Caster metal. Pressure lubricated throughout. Wheel sizes from 4" to 12" dia.; load capacities from 600 to 1700 lbs. per caster.

Which is the right caster for your needs? Let Bond *—specialist in built-for-the-job truck casters—recommend the caster that meets your actual service conditions.* Bond *recommendations are always impartial because there's a* Bond *caster for every industrial requirement. Speed your materials handling with these easy swiveling . . . sturdy casters. Do the job right . . . get the caster that's precisely right. Send for the free* Bond *catalog—it's a step in the right direction.*

BOND FOUNDRY & MACHINE CO., MANHEIM, PA.

(*Continued from page* 192)

electrodes and utilizes the water between them as the resistance element. This permits producing a sizable volume of steam —about 65 lbs. per hour—at any desired pressure, in small diameter vessels, such as 8-inch or 10-inch steel tanks. Low water danger is eliminated because in the absence of water to make a contact between the electrodes no current can pass and no steam can be generated.

MATERIALS USED BY AUTO INDUSTRY

The automobile is perhaps the most diversified article in the world to manufacture and, as a result, production is affected by work stoppages in any section of the country, according to Harry J. Klingler, general manager of Pontiac Motors Divn., and vice president of General Motors Corp., who cited the following materials used by the automobile industry in a normal year:

7,500,000 gross tons of steel; 500,000 tons of malleable iron; 1,000,000 tons of gray iron; about 20,000,000 tires as original equipment; 120,000,000 sq. ft. of plate glass; 400,000,000 board feet of hardwood lumber; 15,000,000 sq. ft. of upholstery leather; 20,000 tons of aluminum; 150,000 tons of copper; 15,000 long tons of tin; 320,000 tons of zinc and lead; 20,000,000 lbs. of nickel; 750,000 bales of cotton; 7,000,000 lbs. of mohair; 500,000,000 board feet of soft wood lumber; 50,000,000 yards of cloth upholstery and as many pounds of hair and padding; 17,000,000 gallons of paints and lacquers.

"Thus, it can be seen that so far as the automobile industry is concerned, there is no such thing as an isolated strike.

REDUCED TOOL COSTS OPEN NEW USES FOR MYCALEX

Developments in the molding technique of G-E mycalex, the ceramic-like plastics, may easily quadruple the number of peacetime applications for this material in the coming five years, according to Donald S. McKenzie, sales manager of the General Electric Chemical Department, Pittsfield, Mass.

"Advances made in the injection molding processes of G-E mycalex during wartime and improved methods that have resulted in reduced tool costs is certain to make this material economically practicable for an increasing number of industrial applications," he said.

"Before the war G-E mycalex in molded form was used almost entirely for electronic equipment because of the limited number of shapes which could be produced. Our ability to injection mold the material into such a variety of shapes today opens the way for a great broadening of uses for industrial applications.

"We expect that the uses to which the mateiral will be put will quadruple in the next five years when the product will be applied extensively in rotating equipment, control equipment, heating devices, motor parts, welding equipment and in-

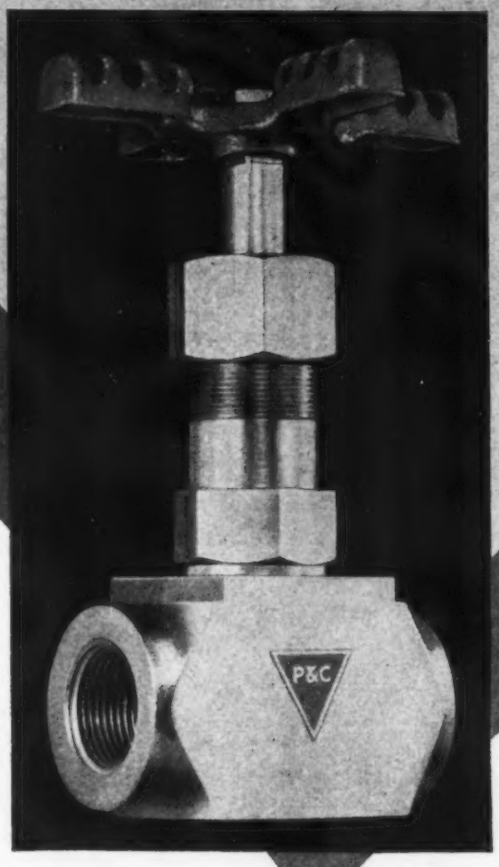
(*Continued on page* 198)

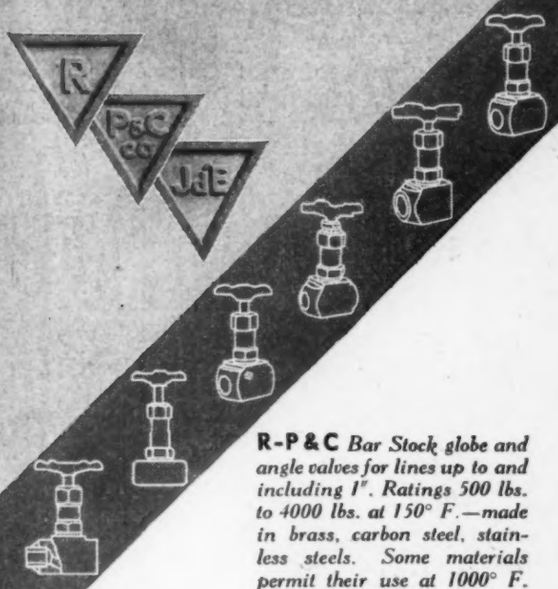
There's a *Story* behind this fine Valve

○ It is designed for severe throttling service. It is precision-made of rigidly controlled materials—for high working pressures. It is a Bar Stock valve—originated, developed and improved by **R-P&C** engineers. But that is only a part of the story.

This fine valve is one of a line that is still made under the "high working pressure" of wartime demands—in spite of the "severe throttling" of wartime shortages. And yet these Bar Stock valves are the best ever produced by **Reading-Pratt & Cady.**

It is a fact that **R-P&C** are making better valves today than ever before. We believe that's worth remembering next time you need valves.





R-P&C *Bar Stock globe and angle valves for lines up to and including 1". Ratings 500 lbs. to 4000 lbs. at 150° F.—made in brass, carbon steel, stainless steels. Some materials permit their use at 1000° F. (475 S.W.P.) Compact and sturdy for their ratings—low in price for their superior performance and long life.*

R-P&C offers you a single responsible source for bronze, iron and steel gate, globe, angle and check valves—cocks and Lubrotite gate valves—bar stock valves—cast steel fittings—D'Este Automatic Valves and Engineering Specialties.

READING-PRATT & CADY

MANUFACTURERS OF
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D'ESTE VALVE AND ENGINEERING SPECIALTIES

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ACCO

TRADE MARK

READING-PRATT & CADY DIVISION
AMERICAN CHAIN & CABLE

ARE YOU BUYING ROPE TO BE USED BY MAINTENANCE CREWS?

As a purchasing agent, you are naturally interested in the safety factor, durability and service life of the products purchased for your maintenance crews.

When in the market for cordage, investigate Whitlock Waterflex Rope —a scientifically lubricated and waterproofed product that remains completely flexible under all conditions — a rope with maximum strength, dependability and service life.

WHITLOCK

WHITLOCK CORDAGE COMPANY

46 SOUTH STREET • NEW YORK 5, N.Y.

(*Continued from page* 196)

sulation for aeronautical ignition equipment to mention a few. We have every reason to believe also that the material will have greater use in the electronic field with the developments in radio, television and radar."

G-E mycalex is a stone-like product composed of ground mica and a special glass. It can be molded to the desired shapes with or without metal inserts by either the compression or injection molding processes and can likewise be machined. An electrical insulator, it possesses a combination of features to a degree found in no other material.

SMOKE PREVENTION FOR STATIONARY PLANTS

Modern overfire jets as perfected and silenced by Bituminous Coal Research Inc., Pittsburgh, Pa., are "new tools for smoke prevention", according to William S. Major, BCR development engineer, who states that operation of the jets reduces the amount of soot and carbon carried in the gases entering the boiler. In addition, study of exit gas temperatures shows that there is an improved heat transfer rate.

MICARTA USED FOR BEARINGS IN STEEL INDUSTRY

Application data, installation information and records of performance of Micarta in the steel industry are contained in new 11-page booklet, B-3776 available from the Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.

The booklet describes special features of Micarta fabric base bearings, long life, increased power savings (25 percent average), fewer adjustments and shutdowns, increased tonnage and other factors. Micarta bearings are used in rod mills, merchant mills, strip mills, bar and billet mills, structural and rail mills, hot steel mills, blooming mills, and other reversing mills.

DEVICE IMPROVES QUALITY OF RUBBER GOODS PRODUCTION

Device called a rugosimeter, which measures roughness of rubber sheets, and paves the way for improved quality and efficiency of rubber goods production, was recently announced by Dr. M. Mooney of the United States Rubber Company's general laboratories, Passaic, N. J. When sheets of rubber are rolled out for production of rubber footwear and other products, their surfaces are often too rough and buckled for use, according to Dr. Mooney, and the rugosimeter is used to measure this processing defect. It operates by measuring the resistance to passage of a stream of compressed air between the rough surface being tested and a smooth plate resting upon it. If the rubber surface is rough, the air passes easily through the "val-

(*Continued on page* 202)

SAFETY
(Reg. Trade Mark)
WEDGE GRIP
LETTERS & FIGURES

- No Spalling!
- No Mushrooming

Pat. No. 2,089,794

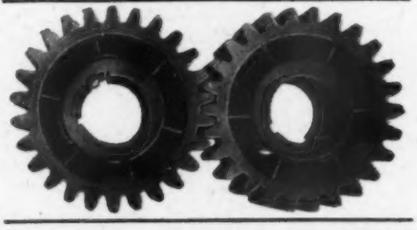
- For tough stamping jobs.
- Deeper impression with less exertion
- Any size character from 1/16" to 1"
- 25% to 50% more service

WRITE FOR LITERATURE

HELP PREVENT AN ACCIDENT TODAY.

M.E. CUNNINGHAM CO.
SAFETY STEEL STAMPS
154 E. Carson St., Pittsburgh 19, Pa.

SIMONDS GEARS



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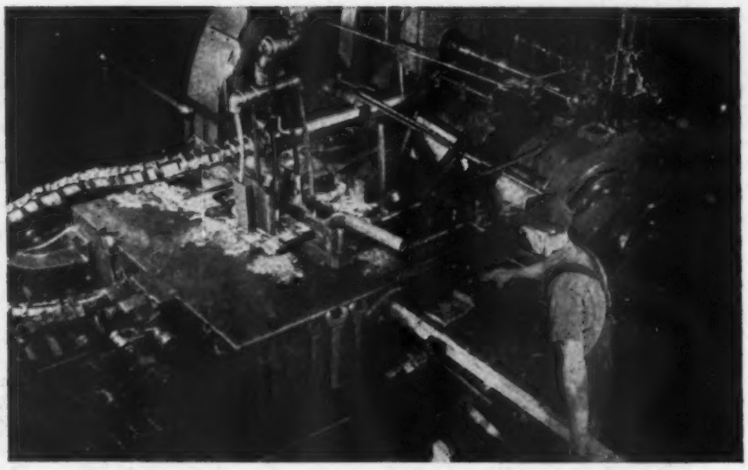
What
have
you for
CARMET
to do?
Here's an Example!
Bearing and
Die, made of
Carbide
AL
CARBIDE ALLOYS DIVISION, Ferndale (Detroit) Michigan

LARGEST NUTS—EMPIRE Nuts larger than 1½" bolt size are produced on machines of this type, especially adapted to RB&W requirements. Sizes up to 6¼" across the flats are processed.



WORLD'S LARGEST—This cold-punching machine, fed rectangular bars, punches the hole, cuts the blank, chamfers, retrims, repunches to clear and center the hole, burnishes the sides — everything but tapping.

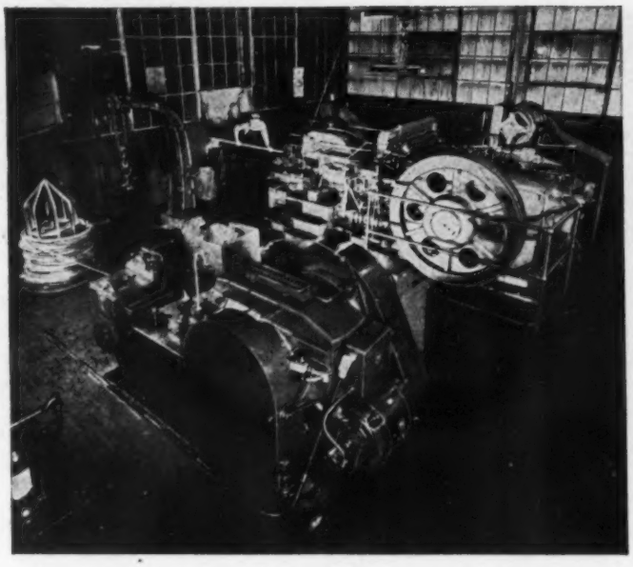
We spent millions . . .

ACCURATE BEARING—RB&W Semi-finished Nuts have an accurate bearing surface at right angles to the axis of the thread. Special facing equipment and quality control insure satisfaction.

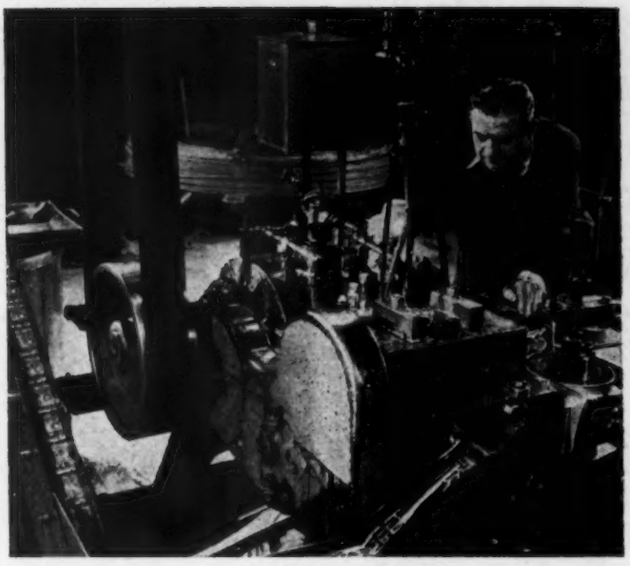
TO SAVE YOU MONEY

You pay no more for RB&W EMPIRE Nuts, when you buy their superior strength, accuracy and finish . . . and you also get freedom from assembly trouble and the permanent dependability assured by the millions RB&W has invested in special equipment and quality control.

Quality control is found in actual processing as well as in the laboratories and inspection departments. For example, the method of cold-punching which RB&W developed has the valuable asset of insuring continuous inspection as part of the manufacturing process. Faulty bars cannot escape detection . . . the nuts must be uniform in size . . . and the hole must be central and concentric after repunching.



NEWEST MACHINES—RB&W works constantly to develop and perfect new processes. These machines are radically different in design and principle . . . are the only ones of their kind in the world.



HIGHEST SPEED—One thousand ¼-inch Square Nuts a minute is the pace of this machine which eats up a ton of steel every three hours. The raw material is cold-rolled in RB&W's own bar mill.

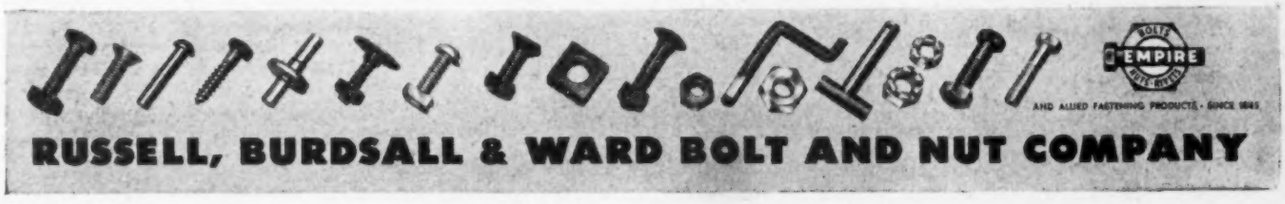
WIDE RANGE—RB&W produces light, regular and heavy nuts, hot-pressed, cold-punched, semi-finished and slotted. The 11,040 6-32 nuts in the pile are equal in weight to the single 4″ nut.

LARGEST PLANT—RB&W's Coraopolis (Pa.) plant is the world's largest devoted exclusively to manufacturing cold-punched nuts. Several millions of nuts are produced and shipped each day.

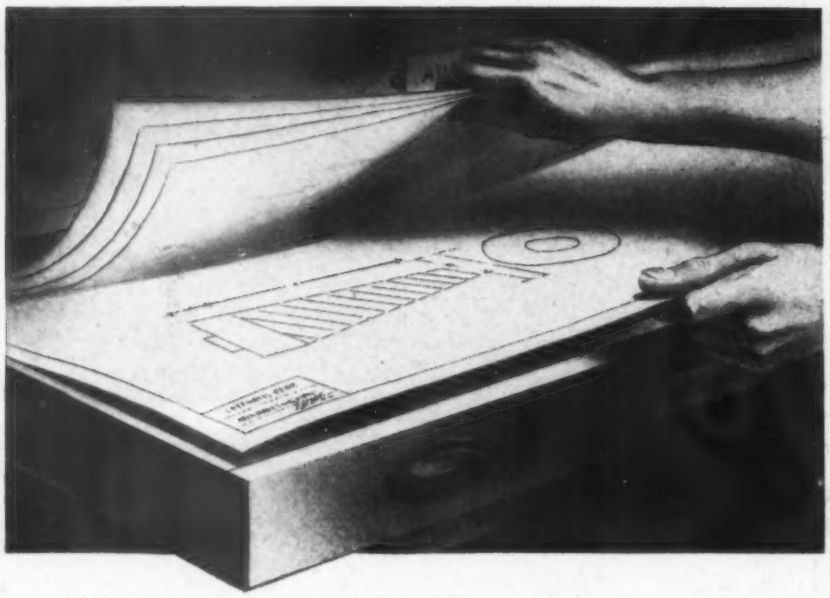
RB&W The complete quality line

101 YEARS *Making strong the things that make America strong*

Plants at: Port Chester, N.Y., Coraopolis, Pa., Rock Falls, Ill. *Sales Offices at:* Philadelphia, Detroit, Chicago, Chattanooga, Los Angeles, Portland, Seattle. *Distributors* from coast to coast. Order through your distributor and get prompt service for your normal needs from his stocks. Also, the industry's most complete, easiest-to-use catalog.



RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY



ONLY *YOU* CAN CHANGE A LINE ON *Arkwright*

Age, frequent trips in and out of file, scores of printings – none of these ever affect the clean sharp prints that Arkwright Tracing Cloths produce. Your vital drawings *stay* just as they left the board . . . only you with an eraser can change them.

These cloths never grow brittle with age, never pick up dust or offset to other drawings, because Arkwright's translucence –designed for perfect reproductions – is literally built into every fibre by a special mechanical process. There are no surface oils, waxes or soaps to dry out and discolor. Arkwright's transparency is permanent.

And erasures mean little to this time-proven tracing cloth. It can take erasure after erasure without wearing through, and re-inking after a revision will not cause feathering.

Why not check these advantages yourself, in your own drawing room, at our expense. Send for generous working samples, and see what we mean when we say "lines as clear as if suspended in air". Arkwright Finishing Company, Providence, Rhode Island.

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Sold by leading drawing material dealers everywhere

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Arkwright

TRACING CLOTHS

AMERICA'S STANDARD FOR OVER 25 YEARS

(*Continued from page* 198)

leys". If the surface is nearly smooth, the air has difficulty getting through. The resistance to the passage of air through the irregular channels is measured by comparison with the resistance offered by an adjustable needle valve.

1 1 1

FILM SHOWS TRUE COLORS OF MOLTEN STEEL

The vivid changes occurring during a heat within the walls of an electric arc furnace are shown in motion picture "Melting of Huron Die Steel" produced for the Allegheny Ludlum Steel Corporation at its Dunkirk, N. Y., plant. The film reveals what the human eye never has been able to observe — the true color of the molten steel and slag. The film creates the impression of actually being inside the furnace during the melting process. The film is available free of charge. Another Allegheny Ludlum film available for free showing is entitled "Corrosion" on mechanism of corrosion attack, and development of stainless steels.

1 1 1

"INDUSTRIAL LOGISTICS IN PAPER"

Action pictures which tell the story of modern materials handling in the manufacture and commercial uses of paper feature a booklet entitled "Industrial Logistics in Paper", issued by Elwell-Parker Electric Co., Cleveland, O.

In 48 pages, 8½ x 11 inches, it presents 147 halftone illustrations of electric power industrial trucks at work in production of pulp, processing and distribution of paper, printing and publishing, and fabrication of principal paper products.

Sixth Booklet in Series

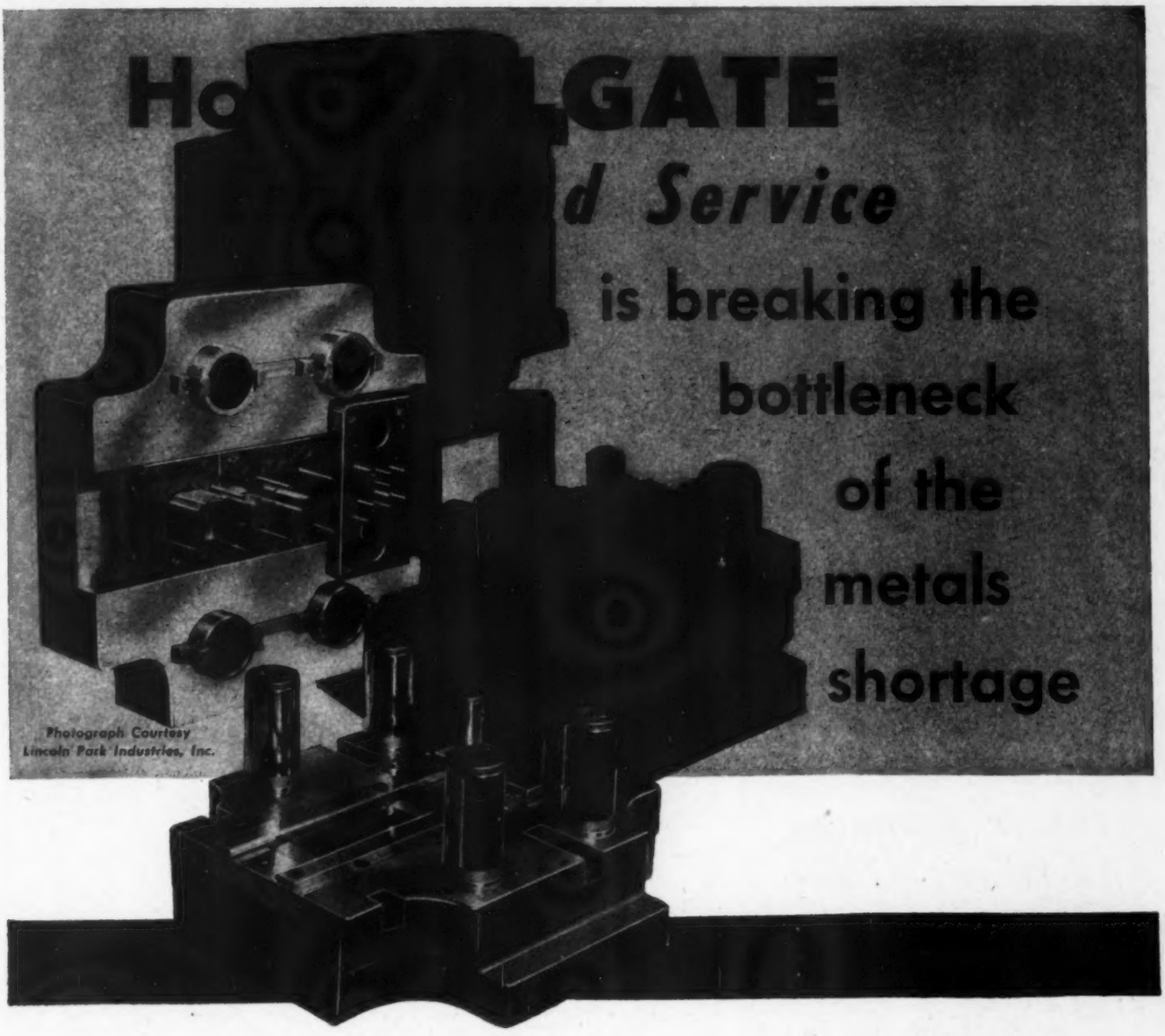
Representative companies throughout the country using Elwell-Parker equipment cooperated in preparation of the booklet which reveals how adequate facilities for load-handling are essential to specialized manufacturing equipment and techniques. Characteristic similarities are noted in many industrial practices for the movement of goods from receiving, through storage, processing and shipping, yet important differences in details are apparent to those interested in the subject of industrial logistics.

While improved methods present opportunities for reducing costs, there are no guarded secrets pertaining to the general use of power trucks. Visual evidence of difficult jobs accomplished therefore is of practical value.

The booklet is sixth in a series so far issued by the Elwell-Parker Company. The first bears the general title "Industrial Logistics", and others deal separately with the logistics of boxes, barrels, bags and bales.

"Industrial Logistics in Paper" and any of the five preceding booklets are available to executives or department managers on request to Elwell-Parker Electric Co., 4532 St. Clair Ave., Cleveland, O., or its field representatives.

(*Turn to page* 204)



MANY MANUFACTURERS have asked us whether it is possible to make an assembly or part in another metal *temporarily,* and still use the fabricating and stamping tools, when the time comes, for the preferred metal.

It's not only frequently *possible* . . . Colgate is *doing it.* By designing double purpose dies so that they may be used, during this interim period with a second-choice material, and later converted, Colgate is breaking the bottleneck of the metals shortage.

Dies engineered to serve a double purpose is just one example of Colgate *Engineered Service* in sheet metal fabricating and stamping of aluminum, magnesium, stainless steel and many other light metals.

If your product is ordinarily made of steel (let's say), perhaps some other material could be used. Then, when steel becomes *available,* in many cases the tools can be converted, at reasonable cost, through Colgate's *Engineered Service.* Write for more information.

STAMPING • FORMING • DRAWING • WELDING • FINISHING • ASSEMBLING

COLGATE

Gray Iron
CASTINGS
S.A.E. or A.S.T.M.
Specifications
Class 20 • Class 30
Class 40

Special Facilities
for Rollover — Cope-and-drag production to 150 pounds

Other castings up to 1000 pounds

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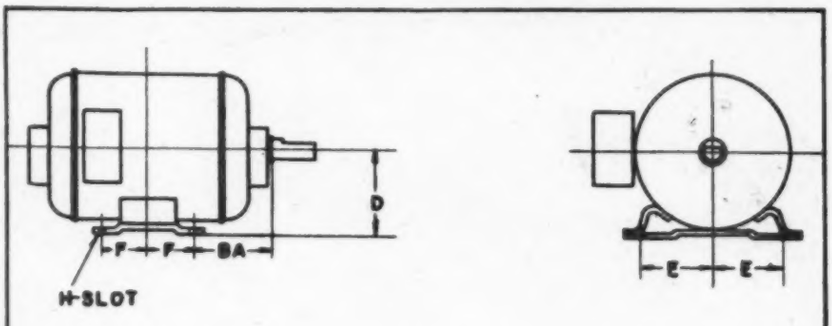
FOREST
CITY
FOUNDRIES CO.
Member Gray Iron Research Institute
2500 West 27th St.
Cleveland 13, Ohio
PHONE PRospect 5040

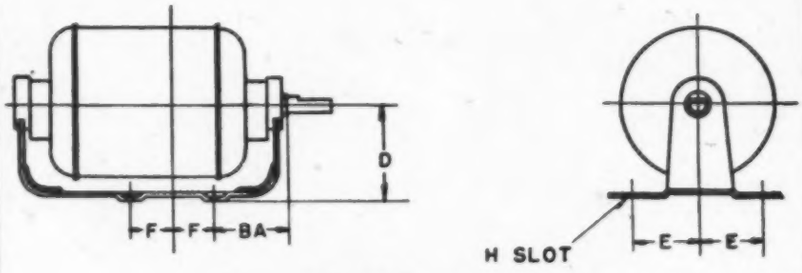
Dimension Standards for Fractional-Horsepower Motors

Motors 1/20 Through ¾ Horsepower to be Built in Three Standardized Frames. Standardized Dimensions Will Eliminate Initial Application as Well as Replacement Difficulties Now Encountered.

By J. L. McKINLEY*
Wagner Electric Corp.



RIGID BASE



RESILIENT OR CUSHION BASE

FRAME NUMBER *	DIMENSIONS IN INCHES				
	D	E	F	BA	H
42	2 5/8	1 3/4	27/32	2	9/32-SLOT
56	3 1/2	2 7/16	1 1/2	2 3/4	11/32-SLOT
66	4 1/8	2 15/16	2 1/2	3 1/8	13/32-SLOT

* FRAME NUMBER SYSTEM IS PROPOSED. SEE DISCUSSION OF "STANDARD FRAME NUMBERS."

A broad new program of standardization for fractional-horsepower motors was announced early in September of this year by members of the Motor and Generator Section of the National Electrical Manufacturers Association. At that time, the initial or basic standard providing a specific method of defining motor rating and performance in coordinated terms of horsepower, speed, breakdown torque and service factor was announced. This basis of rating standard was established in order to eliminate initial application difficulties and to insure proper performance and long life insofar as the electrical characteristics of the motors are concerned.

Although the specific basis of motor rating will be a key factor in obtaining maximum efficiency by both users and manufacturers of fractional-horsepower motors, its principal value results from the fact that machinery or appliance manufacturers can obtain proper motors from all suppliers without having to continually go through exhaustive engineering tests

(*Continued on page* 208)

*Member of the Fractional-Horsepower Subdivision of the Motor and Generator Section of NEMA

Artist—Jacob Lawrence, native of New Jersey

NEW JERSEY—*annual purchases: $3 billion—mostly packaged.*

CONTAINER CORPORATION OF AMERICA

Save Waste Paper

YOU FURNISH LYON will

STANDARD LYON PRODUCTS

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Shop Boxes

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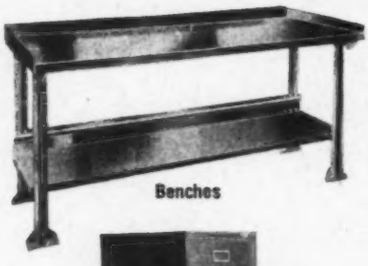
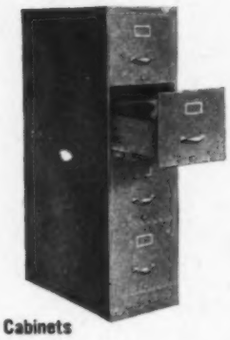

Benches


Filing Cabinets

Adjustable Shelving

CONTRACT PRODUCTION OF SHEET STEEL ITEMS—GAUGES FROM 8 TO 30

Water Cooler Containers

Storage Battery Racks

Testing Cabinets

Office Equipment Stands

THE STEEL make the product

Lyon facilities for the production of a wide range of sheet steel products are far in excess of sheet steel receipts. Steel producers have been doing the best job in the face of current difficulties but there just isn't enough steel to go around. But, if you have steel on hand, or available, Lyon can give you help in one of two ways:

1 STANDARD LYONS PRODUCTS

To complete your plant expansion or conversion program, we will accept your sheet steel (12 to 24 gauge and certain sizes of band steel) and supply you pound for pound with any selection of "Lyon Standard Products" currently in production, a few of which are: Steel Shelving, Lockers, Shop Equipment, Kitchen Cabinets, Filing Cabinets, and Gravity Conveyors.

2 SPECIALIZED CONTRACT PRODUCTION

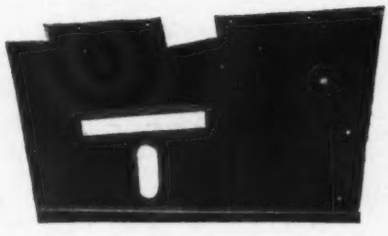
We will manufacture to your specifications: assemblies, sub-assemblies or parts, in gauges No. 8 and lighter up to No. 30; in Lyon production run quantities.

Get in touch with your Lyon Dealer . . . or your closest District Office

LYON METAL PRODUCTS, INCORPORATED

General Offices — 1233 Monroe Avenue, Aurora, Illinois

Branches and Dealers in All Principal Cities



Special Parts

Electrical Control Units

Home Appliance Stands

KLINCH
GRAIN CEMENT
for improved Abrasive Adhesion

Why not write to Hanson-Van Winkle-Munning about this improved adhesive for polishing wheels? It comes in 1 gal. cans, 5 gal. cans, and 50 gal. steel drums.

FOR stainless steel . . . for steel castings . . . for die casting . . . for brass . . . for aluminum . . . for steel . . . for whatever job you need polishing wheels try this powerful, improved adhesive. Try Klinch Grain Cement—it stays on the wheels longer; it's stronger, more lasting. This recently developed, efficient H-VW-M adhesive does away with many of the well-known deficiencies of organic glues.

1803

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MATAWAN, NEW JERSEY
Manufacturers of a complete line of electroplating and polishing equipment and supplies
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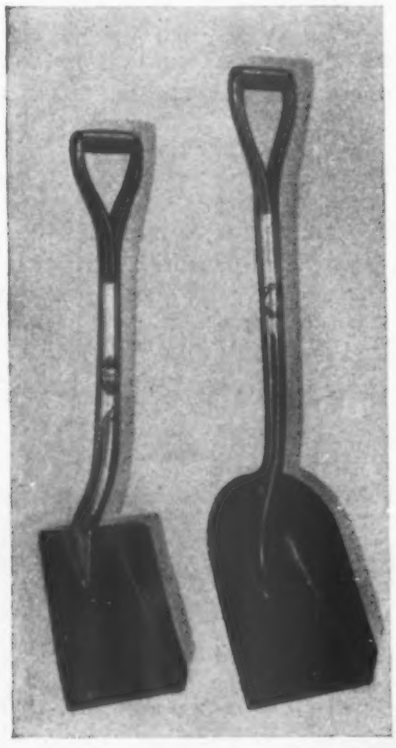
SINCE 1820



INGERSOLL
the "BUY-WORD"
in Shovels

No Split — No Curl — No Bend
End to end—no better shovels made! That's because every Ingersoll is made of Tem-Cross Tillage Steel — with blade edges GUARANTEED NOT TO SPLIT. Electrically heat-treated for springy ruggedness on toughest jobs. Smooth, polished hardwood handles. All of which is why Ingersoll is the "buy-word" with so many buyers. How about *you*?

INGERSOLL STEEL DIVISION
Borg-Warner Corporation
New Castle, Indiana

Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

All blade finishes now black except Molders' Shovels and Grain Scoops, which may be furnished with either face or back polished.

INGERSOLL
Shovels

(*Continued from page* 204)

for each application or make of motor. A standard basis of rating cannot, by itself, eliminate many of the costly difficulties encountered by those who design machines and apply motors to them. Neither can it alone help users of these machines who must service and maintain them with a minimum of expense and loss of productive time. A greater portion of the actual manufacturing and service replacement difficulties with motor driven machines and devices are of a mechanical nature.

The great variation in mounting dimensions and overall sizes of motors of different makes has been of no little concern to the machinery manufacturer, user and service man. To provide for the use of two or three makes of motors in one design of machine, many universal mounting bases, adapter plates and other arrangements have been devised by machinery manufacturers. On the other hand, motor manufacturers have many times supplied mounting bases and endplates different from their own in order to properly adapt their motor to a machine already designed for some other make of motor. This resulted in high costs of tooling and loss of production time. Similar difficulties are experienced by users attempting to replace a motor of one make with that of another make and still obtain satisfactory performance and dependability from the motor-driven device.

New Dimension Standards

Realizing the savings to be gained by machinery manufacturers, motor manufacturers and users, NEMA also initiated the study of dimension standards in 1944. After two years of work, these standards have been adopted. The new dimension standards provide for three motor frame sizes with dimensions as shown in Fig. 1. At the present time, no horsepower and speed ratings will be assigned to these frame sizes.

As indicated in Fig. 1, the dimensions apply to both rigid and resilient or cushion base motors. These dimensions apply to motors 1/20 through ¾ hp, 1800 rpm (1 hp, 3600 rpm). The "H" dimension of 13/32-inch slot and "BA" dimension of 3⅛ inches in the largest frame has been established for the purpose of matching the integral horsepower 203 frame (1 hp, 1800 rpm) which has an "H" dimension of 13/32-inch hole and "BA" dimension of 3⅛ inches. This will provide for interchangeability on belt driven machines, using both fractional- and integral-horsepower motors.

Standard Frame Numbers

Each motor manufacturer now has a separate and distant system of frame designations. Some manufacturers employ numbers, some letters, and others a combination of both to designate the various motor frame sizes. There are very few cases of similarity in the numerous systems. Consequently, purchasers and users of fractional-horsepower motors have found them confusing and of very little use.

(*Continued on page* 210)

• ENGINEERED AND MOLDED AT NO. 1 PLASTICS AVENUE

A clear case for plastics

• Here's the battery that speaks for itself. Its transparent case lets you see the liquid-level at a glance . . . and a hydrometer, molded into the case, tells the charge. It's the storage battery for the G-E self-charging portable radio.

During the war, plastics battery cases proved their value in walkie-talkies, storm lamps, and other military items. For this Willard storage battery, the leakproof, acid-resistant case is injection-molded to exacting specifications by General Electric. The material is polystyrene—lighter than glass and stronger than hard rubber. G. E.'s *complete* plastics service covers every step in the design and manufacture of plastics products.

Have you a plastics product to design? Consult General Electric—world's largest manufacturer of finished plastics products. We'll be glad to send you a new booklet, "What Are Plastics?" Write Plastics Divisions, Chemical Department, General Electric Company, 1 Plastics Avenue, Pittsfield, Mass.

G-E Complete Service—Everything in Plastics

BACKED BY 52 YEARS OF EXPERIENCE. We've been designing and manufacturing plastics products ever since 1894. G-E Research works continually to develop new materials, new processes, new applications.

NO. 1 PLASTICS AVENUE —complete plastics service—engineering, design and mold-making. Our own industrial designers and engineers, working together, create plastics parts that are both scientifically sound and good-looking. Our own toolrooms are manned by skilled craftsmen—average precision mold experience, 12 years.

ALL TYPES OF PLASTICS. Facilities for compression, injection, transfer and cold molding . . . for both high and low pressure laminating . . . for fabricating. And G-E Quality Control —a byword in industry—means as many as 160 inspections and analyses for a single plastic part.

GENERAL ELECTRIC

CD 46-A18

GENERAL ELECTRIC PLASTICS FACTORIES ARE LOCATED AT SCRANTON, PA., MERIDEN, CONN. FORT WAYNE, IND., TAUNTON, WEST LYNN, AND PITTSFIELD, MASS.

These *Allen-head* screws are genuine *Allen-made*

Because—they're tied in with the ALLEN HEAD trade-mark which identifies *only* the product of The Allen Manufacturing Company.

Through 36 years of specialization the Allen name has become synonymous with hex-socket screws, so that many buyers accept Allen-*type* screws that are not Allen-*made*. Even buyers who for three decades have purchased "Allens" by name, have also purchased other makes *in the name of* "Allens".

IF all hex-socket screws were as serviceable as "Allens", all would be well in ordering merely the *type*. But if you want or *need* the Allen strength and precision you do need to specify the *make* — and get it.

If you order from your local Allen Distributor, he will see that you are not disappointed by so-called Allen screws that are Allens in type only. Look for the ALLEN HEAD trade-mark on labels and literature — so you'll *find* the quality you expect in the showdown tests.

THE ALLEN MANUFACTURING COMPANY
HARTFORD 1, ★ ALLEN ★ CONNECTICUT, U. S. A.

(*Continued from page* 208)

In order to make the new dimension standards more useful and effective, a standard system of numbering frames has been proposed. This proposed system has been modeled after the integral-horsepower system which employs frame sizes 203 through 505. Those associated with the application and use of integral-horsepower motors would be the first to give their approval for a similar system for numbering fractional frames because of the great success of the former which has been in use for approximately 16 years.

In the proposed system for numbering the frames, the frame number will be 16 times the shaft height (D dimension). By referring to accompanying diagram, it will be noted that the three frames will be 42, 56 and 66. The BA, E, F and H dimensions will be constant for any given "D" dimension or frame size. Suffix letters will be used to indicate the same features now indicated in the integral system, and, therefore, the same frame numbers with proper suffix letters (when assigned) would be used for vertical and flange motors as are designated for the horizontal motors of corresponding sizes. Individual manufacturers may use any letter preceding the frame number, but such a letter would have no reference to standardized dimensions. For example, a number 66 frame might be designated as "66" by one manufacturer and as "A66" by another manufacturer, but the D, BA, E, F and H dimensions of both frames will be identical and will be the values shown in Fig. 1.

G-E TRANSFERS POWER ELECTRONIC DIV. TO ELECTRONICS DEPARTMENT

Announcement of the transfer of General Electric's Power Electronics Division from the Apparatus Department to the Electronics Department was recently made by W. R. G. Baker, G-E vice-president in charge of the Electronics Department.

Herbert D. Brown was named managing engineer of the new division. The division's headquarters will be at Schenectady, N. Y.

FILMS ON MAGNESIUM "TREASURE FROM THE SEA"

"Treasure from the Sea" is the title of Walt Disney motion picture in technicolor, produced for the Dow Chemical Company, illustrating the use of magnesium in both the consumer and industrial fields. This film runs for approximately ten minutes. To increase the program time to the half-hour found desirable for industrial group and other types of meetings, a 20-minute film on the extraction and processing of magnesium, entitled "Magnesium — Metal from the Sea" is also offered. The films are available for showing from The Princeton Film Center, Princeton, N. J.

(*Turn to page* 212)

APPROVED ...

"for safety, practicability and efficiency in general service"

by the U.S. BUREAU OF MINES

PERMISSIBLE
THREE-QUARTER HOUR
SELF-CONTAINED OXYGEN-GENERATING
BREATHING APPARATUS

APPROVAL NO. 1307

Issued for safety, practicability, and efficiency in general service to the

MINE SAFETY APPLIANCES COMPANY
PITTSBURGH, PENNSYLVANIA, U. S. A.

CAUTION

1. Approved only for respiratory protection in oxygen-deficient atmospheres, or in vapors or gases which do not poison by absorption. Hydrocyanic acid gas is absorbed through the skin.
2. Not approved for successive wearing periods or prolonged use in highly concentrated petroleum vapors.
3. Approved only when assembled with Bureau of Mines Approval No. 1307 canister and Bureau of Mines Approval No. 1307 facepiece.
4. The cautions and instructions printed on the exterior of the operating canister must be fully complied with.

M·S·A

Chemox

SELF-GENERATING

OXYGEN BREATHING APPARATUS

Now, approval of CHEMOX by the U.S. Bureau of Mines—official government testing agency for respiratory protective equipment—joins the mass user-approval of industry, fire departments and public services from coast-to-coast!

CHEMOX is the *only* self-generating oxygen breathing apparatus. CHEMOX gives *complete* respiratory protection in atmospheres containing toxic gases, oxygen deficiency, or both—for forty-five minutes at hard work. CHEMOX weighs only 13½ lbs. complete with replaceable canister—is simple to use and maintain! • *Write for new descriptive Bulletin BM-14.*

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Braddock, Thomas and Meade Streets • Pittsburgh 8, Pa.

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Let Merz Solve Your Unusual Problems of Precision Design

If you're faced with the problem of designing and building an unusual, high-precision experimental engine or test machine, look to MERZ for a sound solution. MERZ is equipped with the best in men, machinery and methods . . . plus the experience of building the most exacting machines for leading research organizations.

Pictured above is a typical example of MERZ work in this specialized field—a single-cylinder, high-precision engine with piston-balanced crankshaft and accessories for testing aircraft cylinder head assemblies—plus testing and developing fuel and ignition systems for high-altitude flying. The extreme accuracy and efficiency in-built in this machine is representative of the workmanship in other MERZ specialties—standard A.G.D. and special gages, tools, dies and other precision products. Write for the full facts on MERZ "four spheres of service" today!

WATCH FOR SPECIAL ANNOUNCEMENT SOON ON NEW MERZ AIR GAGES!

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Pacific Mutual Door Co.
QUALITY PAMUDO SERVICE
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DOUGLAS FIR PLYWOOD
Since 1921
Mills: OREGON, WASHINGTON
Home Office: TACOMA 1, WASH.
Six Branch Offices and Warehouses
CHICAGO 8, ILL. ST. PAUL 4, MINN. KANSAS CITY 3, KAN.
GARWOOD, N. J. BALTIMORE 31, MD. LOS ANGELES 21, CAL.
WRITE US FOR PRICE LIST AND GRADE USE GUIDE

FINED FOR VIOLATING SILVER AND TIN ORDERS

Two Providence, R. I., jewelry firms have been fined in the Providence Federal District Court for violations of Civilian Production Administration silver and tin conservation orders, CPA's Compliance Division announces.

Joseph Migliori and Daniel A. Scullian, doing business as the Rainbow Jewelry Co., Inc., of Providence, were fined $5,301 and $4,712 respectively on October 30 after pleading guilty to using silver in excess of quotas. These violations of CPA's Order M-199 occurred prior to revocation of the order on August 20, 1945. The case had been referred for prosecution to the U. S. District Attorney by CPA's Compliance Division. Order M-199 had restricted foreign silver to war uses and restricted use of domestic silver to specified quotas.

Herman Sohn, doing business as the Artcraft Jewelry Co., of Providence, was fined $450 on the same date after pleading guilty to using tin for costume jewelry in violation of CPA's Order M-38. The order restricts usage because of the shortage of tin for essential purposes. CPA had referred this case also to the U. S. District Attorney for criminal action.

Morris S. Verner, Jr., director of CPA's Compliance Division, pointed out that revocations of CPA regulations do not relieve violators of penalties incurred for violations while the regulations were in effect, and that the Department of Justice and the courts will act on such violations of a criminal nature.

For example, he said, two operators of a night club in Du Quoin, Ill., recently were fined a total of $30,000 in a Danville, Ill., Federal Court for violation in August, 1945 of the War Production Board's construction limitation order L-41, which was revoked in October, 1945. John (Tiny) Kristics was fined $10,000 and Brean Greer was fined $20,000 after pleading guilty to violations of Order L-41. The tavern and restaurant in Du Quoin, known as Tiny's Night Club, was ordered closed for a year and a sign was ordered posted on the night club stating that it was closed by court order.

* * *

SPECIAL CONTROLS ON IRON AND STEEL SCRAP ISSUED BY CPA

Special controls on receipts of iron and steel scrap by consumers and dealers recently became effective in a move to spread the current small scrap supply equitably among all users, the Civilian Production Administration said.

The new regulation, an amendment to the general steel order (M-21), follows the general outlines of the scrap restriction plan approved by the Iron and Steel Scrap Industry Advisory Committee on October 3rd. This committee includes both consumers of scrap and scrap dealers.

Consumers' stocks of iron and steel scrap, which account for about 50 per

(*Continued on page* 214)

For these

MISCELLANEOUS ITEMS

COPPER HAMMERS
BEARING BRONZE
SILICON BRONZE BOLTS
BRASS NUMBERING CHECKS, WASHERS, BURS
BRASS AND BRONZE COTTER PINS
BRONZE SASH CHAIN
LOCK WASHERS
COPPER SHOT
BRASS AND BRONZE NUTS AND BOLTS
BRASS AND BRONZE CAP, MACHINE AND WOOD SCREWS
COPPER AND BRASS RIVETS AND BURS
COPPER AND BRASS WIRE CLOTH
SOLDERING COPPERS
AUTOMOTIVE AND OIL BURNER FITTINGS
COPPER AND BRONZE TACKS
COPPER WIRE NAILS
COPPER CUT, CLOUT AND SHEATHING NAILS
BRASS ESCUTCHEON PINS

...check your local

CHASE WAREHOUSE

HAVE you had difficulty locating brass and copper miscellaneous items? It may be worth your while to call Chase!

Every one of the items shown is stocked by Chase. Not all of them at each of the 20 warehouses from coast to coast . . .

But if your local Chase warehouse *hasn't* the item you want, they'll try to get it for you from one that *has*.

***Remember*— CHASE SERVICE IS AS CLOSE AS YOUR PHONE**

Chase

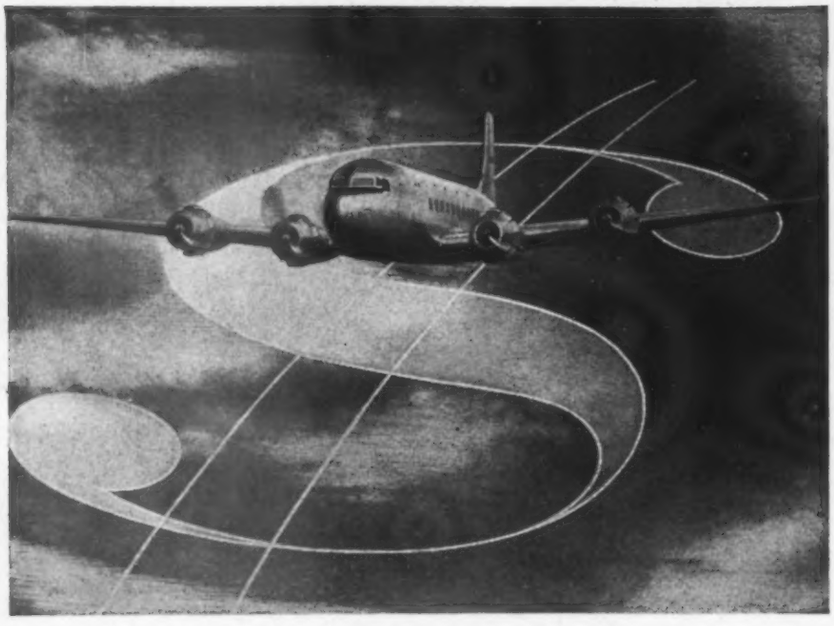
BRASS & COPPER CO.

Waterbury 91, Connecticut

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

This is the Chase Network—handiest way to buy brass — INCORPORATED —

ALBANY† ATLANTA† BALTIMORE BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT HOUSTON† INDIANAPOLIS JACKSONVILLE† KANSAS CITY, MO. LOS ANGELES MILWAUKEE MINNEAPOLIS NEWARK NEW ORLEANS NEW YORK PHILADELPHIA PITTSBURGH PROVIDENCE ROCHESTER† SAN FRANCISCO SEATTLE ST. LOUIS WASHINGTON† *(†Indicates Sales Office Only)*



Profits will fly your way when you use the speed of AIR EXPRESS

Business delays mean that overhead goes up, profits go down. When tools, replacement parts and critical materials are needed *fast*, when a customer wants an item that's "fresh out" – specify delivery by Air Express.

This speedy delivery service brings distant suppliers and warehouses mere hours from your door. So keep things moving by Air Express. This way, customers stay satisfied, profits stay up.

The cost? Much less than you'd think. Rates have been slashed 22% since 1943—all the more reason why the nation's business finds Air Express essential to profit-making.

Specify Air Express-a Good Business Buy

Shipments go everywhere at the speed of flight between principal U. S. towns and cities, with cost including special pick-up and delivery. Same-day delivery between many airport towns and cities. Fastest air-rail service to and from 23,000 off-airline communities in the United States. Service direct by air to and from scores of foreign countries in the world's best planes, giving the world's best service.

RATES CUT 22% SINCE 1943 (U. S. A.)					
AIR MILES	2 lbs.	5 lbs.	25 lbs.	40 lbs.	Over 40 lbs. Cents per lb.
149	$1.00	$1.00	$1.00	$1.23	3.07c
349	1.02	1.18	2.30	3.68	9.21c
549	1.07	1.42	3.84	6.14	15.35c
1049	1.17	1.98	7.68	12.28	30.70c
2349	1.45	3.53	17.65	28.24	70.61c
Over 2350	1.47	3.68	18.42	29.47	73.68c
INTERNATIONAL RATES ALSO REDUCED					

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Ask Today for the Time and Rate Schedule on Air Express. It contains illuminating facts to help you solve many a shipping problem. Air Express Division, Railway Express Agency, 230 Park Avenue, New York 17, N.Y. Or ask for it at any Airline or Railway Express office.

Phone AIR EXPRESS DIVISION, RAILWAY EXPRESS AGENCY
Representing the **AIRLINES** of the United States

(*Continued from page* 212)

cent of the steel-making materials, had dropped to around 2,900,000 tons at the end of August, which is less than a month's supply for the steel industry. This was a 368,000 ton drop from the previous month. Scrap dealers' stocks were down to 438,000 tons, considerably below normal, according to a Bureau of Mines report.

New restrictions in the amended M-21 order were as follows:

1. *For consumers, including steel mills:*

Inventories of usable scrap, except cast scrap, whether prepared or unprepared and including both home (self generated) and purchased scrap, are limited to 45 days' supply.

Because of the greater scarcity of cast scrap, inventories of this type are limited to 30 days' supply.

2. *For scrap dealers or brokers:*

(a) A scrap dealer or broker may not accept scrap in any one month which he does not expect to ship in the following two months. This restriction applies to each month separately.

(b) Effective on January 5, 1947 and on the fifth of each succeeding month, a dealer or broker must report to CPA when his shipments in the two preceding calendar months have been less than the tonnage required to be shipped to balance receipts for the third preceding month (e. g., November-December shipments as compared with October receipts.)

Where such receipts and shipments do not balance as indicated above, a scrap dealer or broker must furnish the following information to CPA:

His receipts of scrap during the past three calendar months (in tons, by months).

His shipments of scrap during the past two months (in tons, by months).

The reason he was unable to balance his receipts for the third preceding calendar month by his shipments during the past two months.

His current inventory.

Scrap dealers and consumers of scrap must adjust and if necessary cancel orders when changes in operations would cause their scrap receipts to vary from the above restrictions.

The order also stipulates that where a person or company maintains more than one operating unit and keeps separate inventory records for each unit, then these limitations apply to each operating unit independently.

INSECTICIDE MARKET STABLE

The insecticide and fungicide market has shown no pronounced effect of OPA decontrols, according to the Agricultural Insecticide and Fungicide Association, New York, which states that the removal of controls will permit purchases in world markets of raw materials, such as arsenic, and will undoubtedly increase supplies of vitally needed materials. Some price increases can be anticipated incident to increased costs of labor, containers and raw materials.

(*Turn to page* 216)

Need Nuts?

We can deliver Speed Nuts NOW...

The new C7000 Series SPEED NUTS are available now in the following sizes:

★	For Use On Machine Screws	4-36	6-32	8-32	10-24	¼-20 ★
	For Use On Sheet Metal Screws	4A	6A	8A	10A	14A

Advantages

1. *Prevent Vibration Loosening*
2. *Applied Faster*
3. *Eliminate Lock Washer*
4. *Eliminate Use of Wrench*
5. *Will not clog or "freeze"*
6. *Weigh Less*
7. *Minimize Shipping Damage*
8. *Cost Less Than Threaded Nuts and Lock Washers*

The immediate availability of these SPEED NUTS is made possible by new, improved dies and high speed production machines. We are, therefore, able to produce *more* SPEED NUTS at prices *actually lower* than ordinary threaded nuts, plus lock washers.

Each SPEED NUT in this new series has been engineered to a precision formula based upon the diameter and strength of the screw with which it is used. As a result these SPEED NUTS are more compact, withstand higher torque tightening and provide greater tensile strength.

Every threaded nut and lock washer on your product is now a potential cost-saving assembly spot. Write for C7000 sample box containing all 10 sizes today and you'll soon be assembling the SPEED NUT way!

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Speed Nuts*

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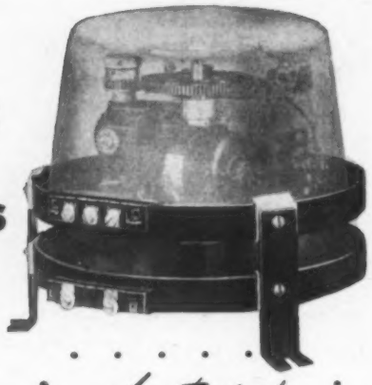
FASTEST THING IN FASTENINGS

SMALL MOTOR DRIVE FOR RHEOSTAT ASSEMBLIES



• Bulletin 60 Motor Drive offers the ideal means for remote control of single or multi-plate Rheostat Assemblies. It is built on a 13" diameter steel plate for operation of Rheostats up to three plates and is available with either series or shunt motors for 115 or 230 volt operation.

features

1. All parts immediately accessible by removal of dust-tight cover.
2. Precision type snap action adjustable limit switches.
3. Motor with heavy duty gear box protected by slip-clutch.
4. Cast mounting base for motor, gears, limit switches and drive shaft maintains allignment.

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RELAYS • RESISTORS • RHEOSTATS
Electric control devices since 1892

Send for Bulletin 60A which gives complete information and prices on the Ward Leonard Small Motor Drive for Rheostats.

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50 SOUTH STREET, MOUNT VERNON, N. Y. • OFFICES IN PRINCIPAL CITIES

Your Best Buy for All-Purpose Hand Sawing

The improved NEW GRIFFIN blade, sometimes known as the Griffin Soft Center, is flexible as a soft-back blade, tough as an all-hard. Has flexible but *tough* center, hard back, extra hard teeth. Does not bind, sag or shatter. Hand frame sizes only . . . Other Griffin Best Buy Blades include Griffin High Speed Steel, 18-4-1 tungsten, and Griffin Special Alloy, molybdenum high speed steel, for power machine use. And Griffin Non-Strip for hand sawing thin sheet and tubing without tooth breakage . . . Write for Price List.

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Hack Saw Blades
MADE BY G. W. GRIFFIN CO., FRANKLIN, N. H.
Hack and Coping Saw Blade Specialists Since 1880

SAYS AUTOMOBILE INDUSTRY APPROACHES BUYER'S MARKET

Competition in the sale of automobiles is likely to be in effect by next summer, D. U. Bathrick, general salesmanager of Pontiac Motor Division, predicted at recent meeting in Kansas City. Speaking before 450 Pontiac dealers, Mr. Bathrick warned:

"By next summer you may be in a competitive market because of one or the other of two economic factors: rising prices which have so reduced the ranks of new car purchasers that each becomes a real prize, or—increased production has satisfied the emergency market for new cars and left a residue of not-so-bad-off customers who can buy or wait a year, as they see fit.

"The day is coming, and coming fast, when automobiles again must be sold and not doled out like prizes. Some believe that day will be a long time coming—that cars are wearing out faster than we can build them. But I say we are approaching a Buyer's Market right now. The buyers are not lining up with the same enthusiasm as they did six months ago. How can the demand lessen without an appreciable increase in production? Simply because the customer's money is being diverted to other needs before he gets a chance to buy the car he wants and needs so much."

1 1 1

WAR ASSETS ADMINISTRATION DEFINES "SMALL BUSINESS"

At the request of its regional directors and zone administrators, War Assets Administration has issued an interpretation of its definition of small business.

The agency's standard definition of small business as given in various of the WAA regulations is not changed, but the interpretation spells out certain criteria to be used when factors other than the number of employees are required in order to arrive at a determination as to whether a commercial, industrial or agricultural enterprise is a small business.

WAA's standard definition of small business is:

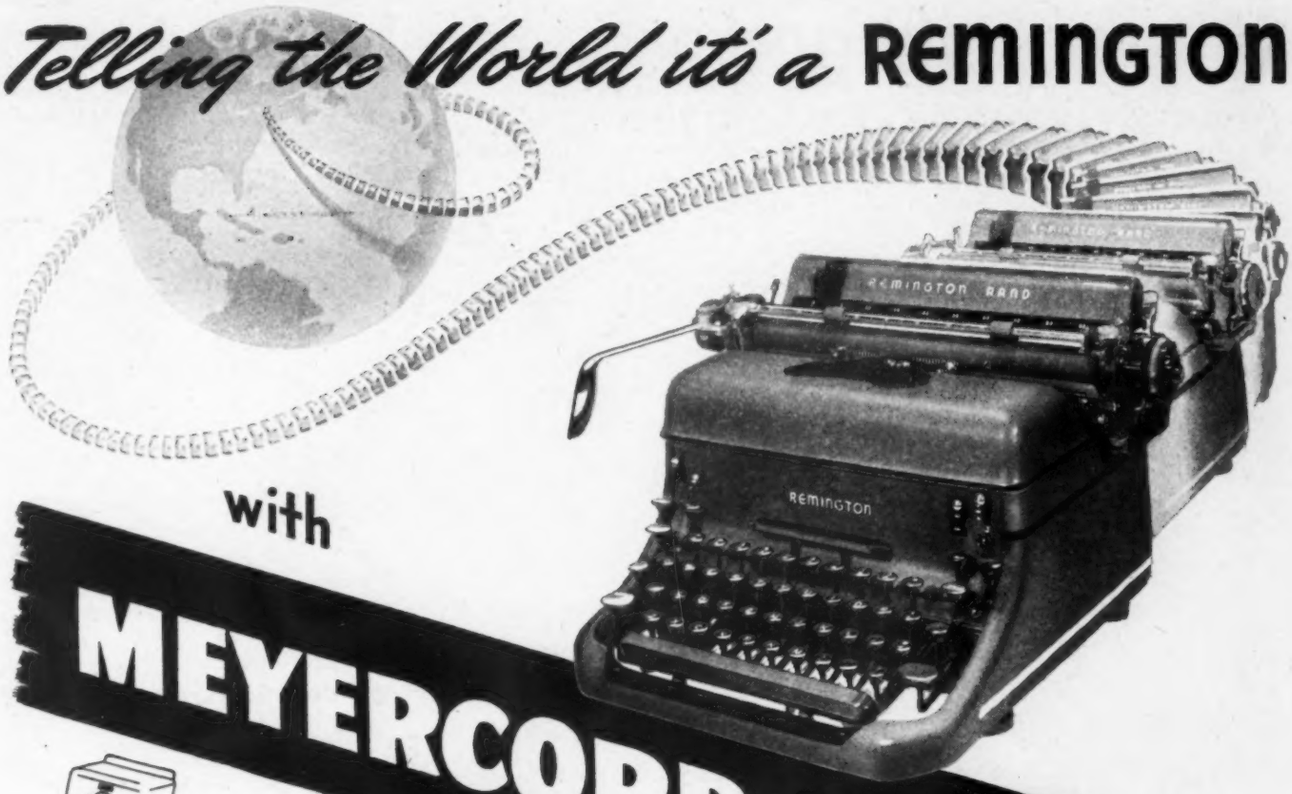
"Any commercial or industrial enterprise or group of enterprises under common ownership or control which does not have at the date of purchase of surplus property more than 500 employees, or any such enterprise which by reason of its relative size and position in its industry is certified by WAA to be a small business."

Because its field officials desired more specific criteria for their guidance in arriving at determinations of small business when factors other than number of employees were to be used as the basis for determination, the new interpretation sets the following standards for "size" and "position":

(a) A small business may be defined as an independent commercial, industrial or agricultural enterprise, or group of such enterprises, under common ownership or control, which is not dominant

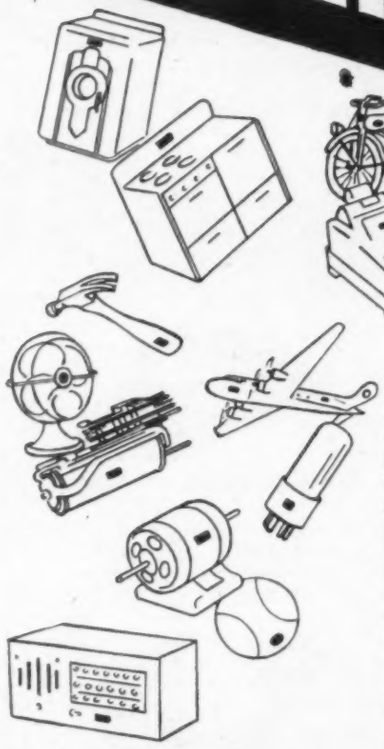
(*Continued on page* 220)

Telling the World it's a REMINGTON



with

MEYERCORD DECALS



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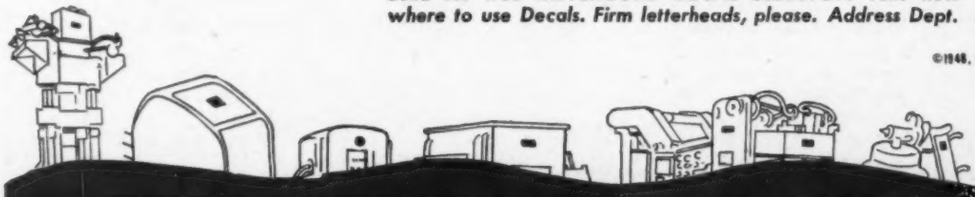
Meyercord Decalcomania is a durable, flexible material that can be quickly applied to practically any commercial surface . . . at production line speeds. No rivets or screws. No sharp corners or edges. Simple, easy-to-use methods assure smooth, legible. lasting adhesion.

Nameplates, trademarks, operating instructions, lubrication guides, patent data and scores of other nomenclature can be reproduced in any number of colors, sizes or designs. Meyercord Decals are washable, resistant to acids, moisture, abrasion, vibration and hard use. They can be applied to concave, convex or flat surfaces with equal success.

Investigate Meyercord Decals, the modern stream-lined method of product identification used by manufacturers to save time and material cost.

Send for free MEYERCORD DECAL SELECTOR. Tells how and where to use Decals. Firm letterheads, please. Address Dept. 61-12



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ORDER THESE STANDARDIZED MATERIALS

For speedier gasket service, specify Armstrong's standardized sealing materials. Five basic types, available in 71 different formulations, provide a range of properties that can meet almost any gasketing specification. You can count on fast delivery of a performance-proved material without production delays or costly, to-order compounding.

Get expert, unbiased recommendations—backed by 34 years of gasketing research and experience—from an Armstrong representative. Or write to Armstrong Cork Company, Gaskets and Packings Department, 7212 Arch Street, Lancaster, Pa.

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28 different materials affording a broad choice of densities, degrees of compressibility, high frictional value, and other properties.

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19 compositions offering varying degrees of true compressibility combined with the desirable properties of the synthetic rubbers.

Armstrong's Synthetic Rubbers

19 precisely compounded materials. Available molded, die-cut, in sheets or tapes and in extruded rings.

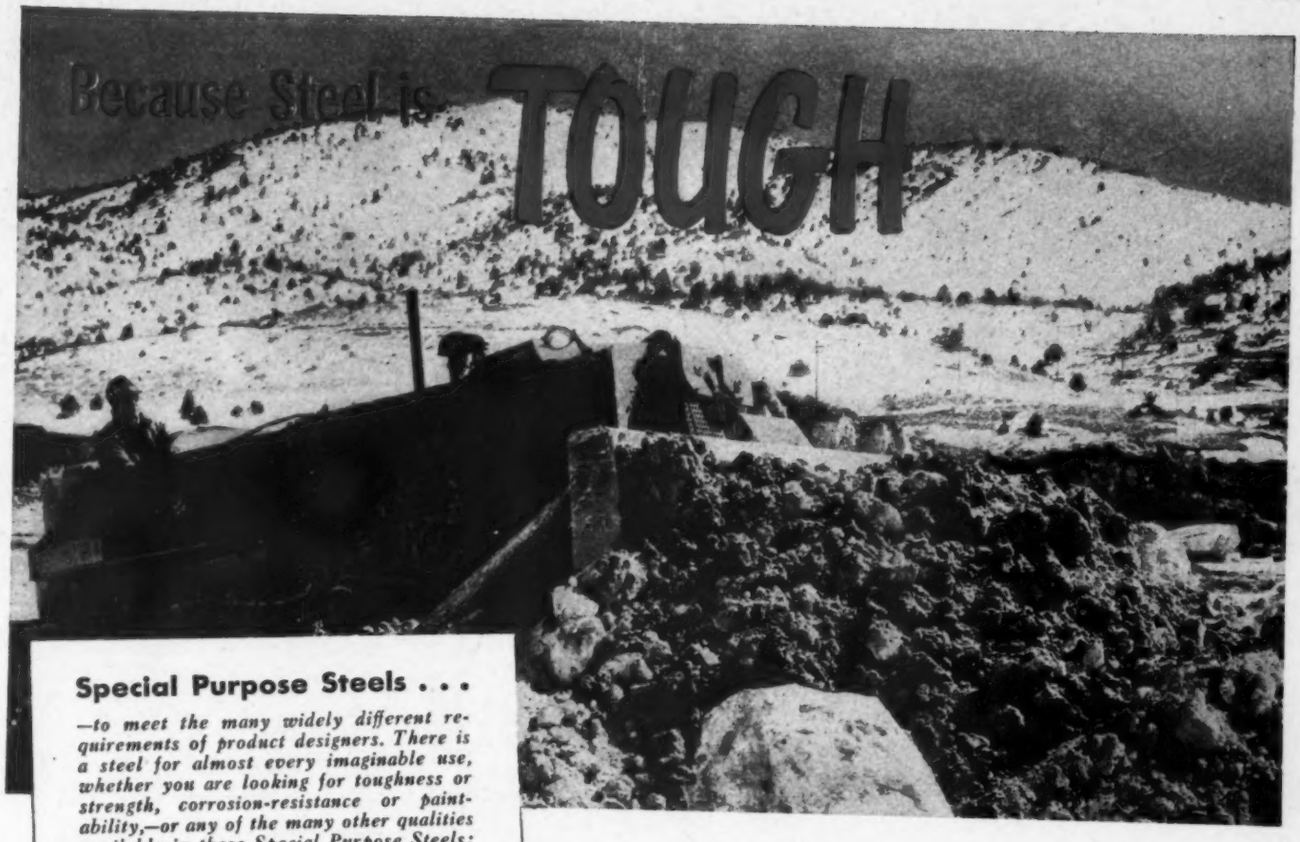
Armstrong's Rag Felt Papers

2 types. Dry or impregnated. Can be die-cut to specifications. Also available in sheets, rolls, strips, tapes, and laminations.

Armstrong's Fiber Sheet Packings

3 types. No. 841, tough, resilient fibrated leather. No. 143, non-corrosive. No. 1242, low-cost, general-purpose fiber sheet packing.

ARMSTRONG'S GASKETS • PACKINGS • SEALS



Special Purpose Steels . . .

—to meet the many widely different requirements of product designers. There is a steel for almost every imaginable use, whether you are looking for toughness or strength, corrosion-resistance or paintability,—or any of the many other qualities available in these Special Purpose Steels:

U·S·S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U·S·S CARILLOY STEELS—Alloy steels for the special jobs of industry.

U·S·S HIGH STRENGTH STEELS to resist atmospheric corrosion and increase strength without adding weight.

U·S·S COPPER STEEL to give at least twice the atmospheric corrosion resistance of regular steel at little additional cost.

U·S·S ABRASION-RESISTING STEEL to combat wear and friction.

U·S·S HOT-ROLLED AND COLD-ROLLED STEELS to provide the basic advantages of steel, plus maximum economy in accordance with the needs of each job.

U·S·S PAINTBOND—A galvanized, Bonderized sheet that permits immediate painting and holds paint tighter.

U·S·S VITRENAMEL—Sheets designed especially for porcelain enameling.

U·S·S ELECTRICAL SHEETS for motors, generators and transformers.

. . . it is the one BEST metal to use where parts are subjected to concentrated stress, wear and shock

BECAUSE steel is tough . . . *tougher than any other metal* . . . it is the basic raw material for countless products that must be built to take abuse.

Yet steel, to be tough enough for the *specific use*, has to be designed that way. And therein lies its remarkable versatility.

Steel can be designed to combine toughness with a wide variety of other metallurgical characteristics that will best adapt it to the many different jobs it has to do. It can be made tough and elastic . . . tough and ductile . . . tough and hard. It can be made almost anything it has to be.

That's why, when you are ready to select steel for your product, it will pay you to check with our metallurgical experts. Tell us what you want the steel to do and we'll tell you which steel of the thousands available has just the right combination of features to do the best job at the lowest cost to you and your customers.

9 times out of 10 STEEL will do it better

USS STEEL — UNITED STATES STEEL

CARNEGIE-ILLINOIS STEEL CORPORATION
Pittsburgh and Chicago
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Birmingham, Southern Distributors
United States Steel Supply Company, Chicago, *Warehouse Distributors*
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Except for Black Eyes

...there's a Turco Industrial Cleaning Compound for just about everything. For Turco scientists, through famous Turco Surface Chemistry*, have developed hundreds of *specialized* cleaning products and processes for *all* types of business, industry and institutions. There's a skilled Turco Field Serviceman in your neighborhood. Call him today.

**The scientific application of all the factors in cleaning to a specific problem*

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(*Continued from page* 216)

because of its size or standing in its specific field of business; and

(b) Is not financially or otherwise in any way controlled by a commercial, industrial or agricultural enterprise which occupies a dominant position in its field of business activity.

Wholesalers buying without priority are permitted to purchase surplus goods at lowest prices if they sign an agreement to resell it only to small business as defined by WAA.

Only two classes of small business buy war surplus goods with priorities:

1. The veteran who is establishing himself in a small business (this group has No. 2 priority).

2. Small business buying through the Reconstruction Finance Corporation (this group has No. 3 priority).

The Surplus Property Act does not define small business. It is WAA's responsibility to make the definition pertaining to the first group, and RFC's responsibility for the second group of buyers. By joint agreement, the two agencies have adopted similar definitions.

* * *

100,000-MILE TIRES AND LIGHT METAL BODIES FOR TRUCKS

Commercial motor vehicles equipped with lighter, stronger, and more enduring bodies of aluminum, magnesium, and stainless steel were described before recent SAE National Transportation & Maintenance Meeting in Chicago, as early future developments. Speakers told members of the Society of Automotive Engineers that these light-weight body materials have withstood the tests of experimental use and have demonstrated that they can contribute substantially to the speed, economy, and convenience of commercial highway transportation.

J. H. Dunn, of Aluminum Co. of America, New Kensington, Pa., reported that aluminum bodies for motor trucks assure savings on the order of 10 per cent less fuel consumption, 25 per cent greater tire mileage expectancy, and 10 per cent step-up in acceleration. Magnesium was characterized by Mr. Dunn as eminently suitable for truck bodies, with commensurate savings. Both aluminum and magnesium were said to augment other economies by this resistance to corrosion.

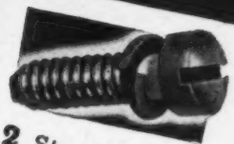
Speakers asserted that trucks with lighter bodies were much more agile on the road and that fewer trucks consequently could perform more work. They explained that light-weight body materials tend to localize unavoidable damage, and actually protect engine and chassis by absorbing shocks.

F. O. Lewis, of Dayton Power & Light Co., Dayton, Ohio, presented an experience record of aluminum-body trucks to show that large increases in miles per gallon of fuel, large decreases in operating costs, were possible. Savings in license fees alone, Mr. Lewis said, more than offset the increased costs

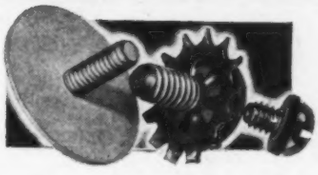
(*Continued on page* 222)

WE'RE TAKING ORDERS FOR SCOVILL SEMS WASHER ASSEMBLED SCREWS!

1 Standard "Sems" type internal or external multi-toothed washers.



2 Standard split type lock washers.



3 Special SCOVILL engineered adaptations of multi-toothed washers, and variations of fibre or metal, plain or spring, standard washers. Here SCOVILL ingenuity enables you to fit the right type of fastening to the exact requirements of your job.

SPEED UP ASSEMBLY! GET BETTER WORK!

Take time to take a look at your fastenings! Are they the best type for the job—or are you losing time—and money?

Sems washer assembled screws offer important advantages. The washer's permanently fastened—yet free to rotate. Easier, faster driving. No fumbled, lost, or forgotten washers. Matching finish on both parts. Easier ordering. Balanced inventories.

If you use fastenings in mass production—see what Scovill can do for you. And if you use special fastenings in large quantities, contact Scovill. Fill out the coupon below and mail it—now!

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Please have your sales engineer call with more information on:

- ☐ SEMS Washer Screw Assemblies
- ☐ PHILLIPS Recessed Head Screws
- ☐ CLUTCH HEAD Screws
- ☐ Special Cold-forged Fastenings

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SPECIAL WASHERS

We offer you the advantage of more than 25 years of specialized experience in designing and manufacturing Special Washers. During these years we have accumulated over 10,000 sets of tools, one of which may exactly fit your specifications.

SMALL STAMPINGS

As in the case of Special Washers, we can supply Small Stampings in any metal, in any quantity. Hundreds of satisfied customers are testimony to our high quality and reasonable prices. Send us your specifications or prints.

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Instantly Adjustable
TO HEIGHT THAT'S RIGHT FOR ANY WORKER!

Solve your industrial seating problems simply and easily by specifying Kewaunee Automatic Adjustable Chairs and Stools. Especially designed to insure correct body alignment, they adjust instantly to proper height without the use of tools or fussing with "gadgets." Merely raise seat and it stays put.

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AUTOMATIC ADJUSTABLE CHAIRS and STOOLS

Will fit any man or woman, tall or short, light or heavy. Available in 4 height ranges—12-15", 15-21", 18-27" and 24-36". May be had with adjustable foot rest if desired.

Write today for circular and full details. We'll be glad to send you a Kewaunee Automatic Adjustable Chair or Stool on 30 days' free trial—no cost or obligation to you!

C. G. Campbell, President

KEWAUNEE MFG. CO., ADRIAN, MICH.

(*Continued from page 220*)

of aluminum over steel, or wood-and-steel bodies.

Truck bodies of stainless steel were recommended by V. M. Drew, of Fruehauf Trailer Co., Detroit, Mich., as helpful in converting dead weight into revenue-producing payload and in minimizing maintenance and frequency of replacement.

The 100,000-mile tire already is available, the meeting was told by Ben Sorci, of Sorci & Bryant, Chicago, Ill. Mr. Sorci explained that failures to obtain greater mileage from commercial vehicle tires may be ascribed directly to ineffective tire maintenance. Under present methods of operating, Mr. Sorci asserted, the average owner gets no more than 50 per cent of the mileage actually built into his tires.

STANLEY SAFETY CHARTS

To help prevent accidents in industrial plants, and to stimulate interest in safety practices among plant employees, Stanley Tools has prepared a series of thirty-six Safety Charts. Each Chart gives one complete safety message.

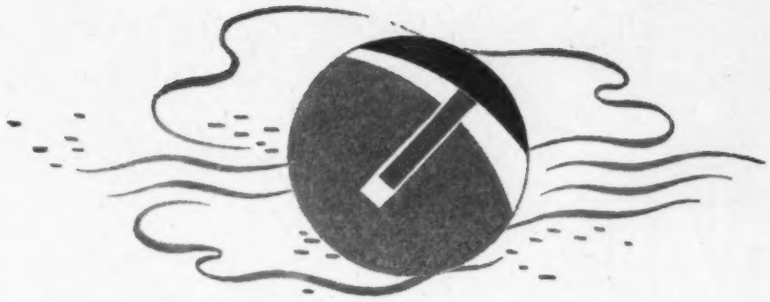
Illustrations for the Stanley Safety Charts are humorous drawings, enlivened by color and accompanied by brief wording. Mounted on both sides of heavy cardboard, each Chart measures 18" x 12". Charts have two metal grommets at the top to permit hanging on hooks, if desired. Surfaces of the Charts are lacquered so that they may be cleaned easily.

It is suggested that one or two of the Charts be displayed on the safety bulletin board, or elsewhere in the Plant each week. In this way one set of the Charts can be used for several months or more without duplication.

Stanley Safety Charts are offered to industrial plants at the cost of printing and postage, $2.50 per set anywhere in the U.S.A. (Canadian price is $4.10 per set, payable in Canadian funds), Check for proper amount should be mailed with order to Stanley Tools, Educational Department, New Britain, Conn.

PIPE NIPPLES, COMMERCIAL STANDARD CS5-46 MODIFIED

At the request of copper and brass manufacturers, that portion of paragraph 7 and table 1 showing three grades of brass pipe nipples, Commercial Standard CS5-46, Pipe Nipples — Brass, Copper, Steel and Wrought Iron, has been changed to show red brass as the only brass for the manufacture of brass pipe nipples. Modification was made because it is thought that red brass is more satisfactory to meet the various water conditions found in different parts of the country; also it will eliminate need for carrying three grades of brass pipe nipples in stock. TS-4149 covering change was recently released by Division of Trade Standards, National Bureau of Standards, Washington, D.C.



WHAT— NO "FEATURES"?

. . in Gast Vacuum Pumps (to 28 in.), Compressors (to 30 lb.), and Air Motors (to 1 h.p.)

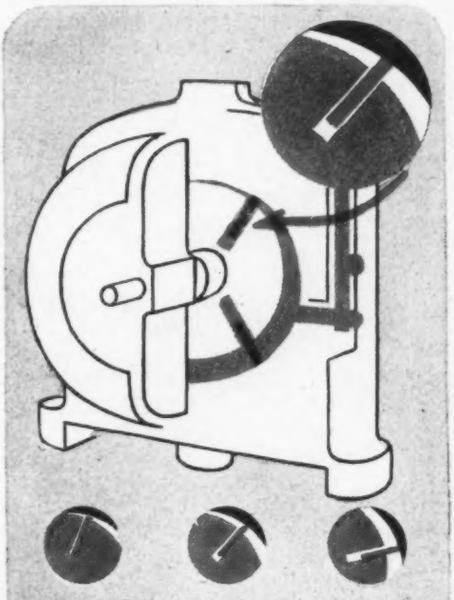
The Gast is so remarkably free of "features" and complexities that users say truly, "It practically works without works."

Could anything be less prone to trouble, or more likely to work, than. A slotted rotor, with one-piece vanes which slide outward against the cylinder walls, and seat themselves, and take up their own inconsiderable wear, because centrifugal force won't let them do anything else?

That's all there is to a Gast. That's why Gasts work so dependably, why they deliver MORE per pound of weight and MORE per horsepower, and why they can be so well built, yet so reasonably priced.

The logic of Gast simplicity appeals strongly to men who manufacture machines. They see that simplicity in terms of sales, and in terms of carefree operation in users' hands. More and more of them are sending for the Gast catalog, and arranging for a Gast Engineering Test. Very possibly it will pay you to do the same

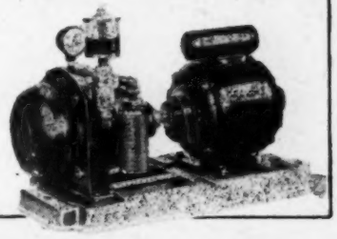
GAST MFG. CORP.
150 Hinkley Street
Benton Harbor Michigan



Vanes: Self-seating . . self-adjusting . . springless. Centrifugal force holds them against cylinder wall. They "work without works". . . Continuous, non-pulsating flow. . . More air per pound of weight, more air per horsepower. . . Forced-air cooling: long life, oil economy, no hot-oil odor . . . Automatic shaft seal: no packing, no leaking, no adjusting.

ENGINEERING TEST OFFER .. So You Can SEE IF YOU'RE MISSING SOMETHING!

Simply write our Engineering Department and explain the operation you think air might handle, or describe the job air is already doing for you. Our Engineering Department will study your problem, select or design a Gast unit to do the specified work at less cost or at greater efficiency or both. Then, without cost or obligation, the recommended unit will be shipped to you for your performance tests.

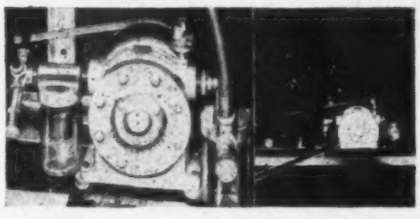


GET THIS IDEA-CATALOG

It not only tells how Gasts are built and all about them, but suggests uses that may not have occurred to you. Write for it; no charge or obligation!

GAST ROTARY

VACUUM PUMPS: AIR COMPRESSORS: AIR MOTORS



Gast Vacuum Pumps as Standard equipment on a Camera

A Gast Compressor in Combined Vacuum and Pressure Duty on a Printing Press Feeder

A Gast Air Motor as a Portable Mixer

Use the right blade

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For the right saw for any given job, see the man who sells STAR Blades! Star makes blades for cutting everything a hack saw or band saw can cut —a *complete* line. Be sure! Tell your Star supplier the job you want to do. He'll tell you — quickly, expertly — what STAR Blade will do it best!

FREE BOOKLET OF HACK SAW HINTS. *Answers blade questions for you as they arise: what speed to use . . . coarse teeth or fine . . . what causes dulling . . . blade lengths . . . prices.*

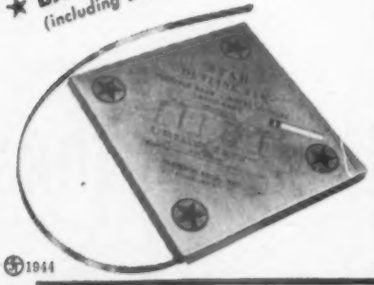
Ask your Star supplier for your copy of "Metal Cutting." Helpful . . . free.

★ HAND BLADES

★ POWER BLADES

★ FRAMES

★ BAND SAWS
(including skip-tooth)



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CLEMSON BROS., Inc., Middletown, N.Y.

Economics of Purchasing

(*Continued from page* 129)

What conclusions would be drawn from all this? It seems to me that simply stated they are these:

(1) Unless we continue to have economic stability after the dammed-up postwar demand has been met and the huge free spending power has been spent, then we shall have unemployment, bread lines, New Deal philosophies, refurbished though antiquated doctrines, and quite possibly, another war.

(2) Top business management must contribute its full share to maintaining that stability.

(3) If procurement is a major function then procurement men must be qualified to consider and be considered as themselves part of top management

(4) To do this they must think far beyond the departmental and operational limits of a traditional purchasing department.

And this brings me to the N.A.P.A. and its responsibilities. My first suggestion is that the Association develop some kind of a program *in addition* to the present one, that shall lead qualified, experienced procurement men to thinking in terms of broad policy. For various reasons, the numbers of members interested in doing this may not be too numerous. But for those who are, the opportunity should be there. For procurement men to fail to give these matters adequate emphasis is to condone a limited perspective inconsistent with our own preaching.

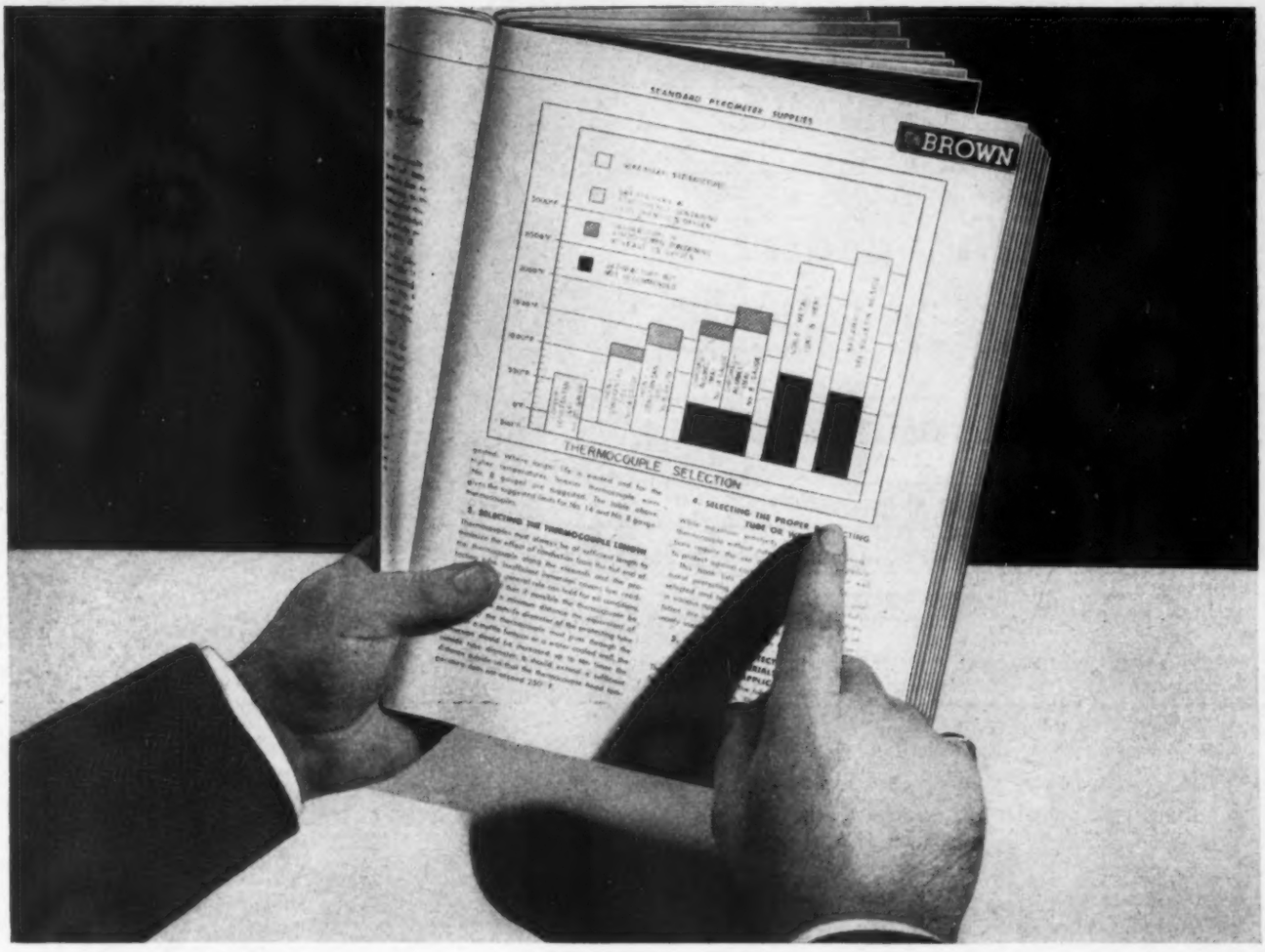
It seems to me, too, that there is another thing we might consider. I believe one way to broaden ourselves and at the same time to convert non-procurement skeptics to the true gospel would be to develop far beyond what the Association has done thus far a series of research projects conducted jointly with other trade associations. We have common problems with sales, engineering, production, accounting, and research groups. Why not undertake more joint studies on specific problems? Why not make joint reports to the respective associations as well as to our own? Industrial advertising and industrial selling groups surely could be interested in working jointly with industrial purchasing agents on common problems. Such joint efforts might well go considerably further in correcting misconceptions on both sides than merely trying to argue out the debatable issues in print.

Much has been said about purchasing as a service department. No single statement has done the purchasing profession more harm than this one. Purchasing is no more a service department than is production or sales. There are at least two fundamental errors underlying this contention. The first mistake is that of believing that because purchasing is not engaged in processing materials, it is therefore not producing. The second mistake is that of believing that the "service" which purchasing renders is primarily to production, whereas, in fact, its contributions are—or should be—not to any one department but to the company. For a purchasing agent to reason otherwise makes it impossible for him to have the proper conception of his responsibilities. It distorts his whole thinking and clouds his vision.

What would you think of a sales manager who said, "Sales is a service department for production—trying to sell what we are offered to sell," or of an engineering department that argued that it was only a "service department" whose function was limited to drawing plans and setting specifications for products to be made in the factory; or of a medical department whose "service" was thought to be limited to rendering first aid to injured employees instead of working on accident prevention, or of increasing production and lowering cost of production through study of lighting, ventilation, rest periods, vacations?

Isn't it clear that a man makes of his job only what he sees in it? A procurement man who thinks of his job as merely a "service department to production" by no stretch of the imagination ever can develop it into that service to the company, to its customers, and through its customers to the public, that rightly should be expected of it. The kind of purchasing man management is looking for is one who thinks of his job as one of service to the entire company, and through it to the national economy. The responsibilities placed upon procurement men were never greater than those imposed by present day conditions. I am confident they will be met with understanding and courage. And if at times those responsibilities seem too large, and our individual contribution of no moment, perhaps it will help a little to recall the words of Canon Farrar:

"I am only one,
But I am one.
I cannot do everything,
But I can do something.
What I can do,
And I ought to do;
By the grace of God I will do."



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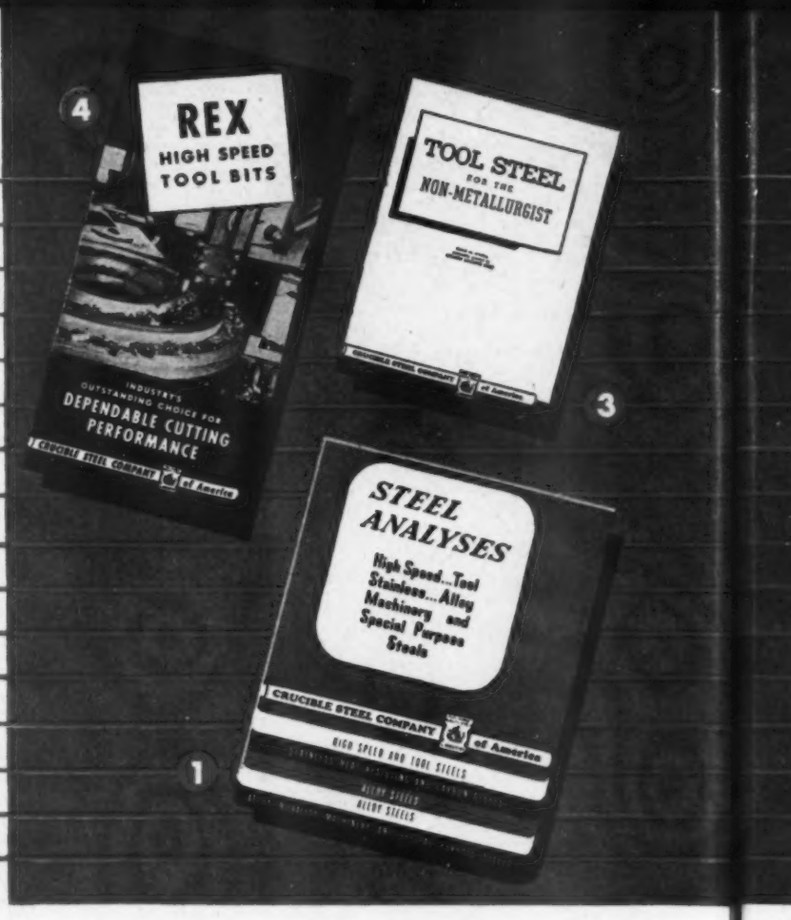

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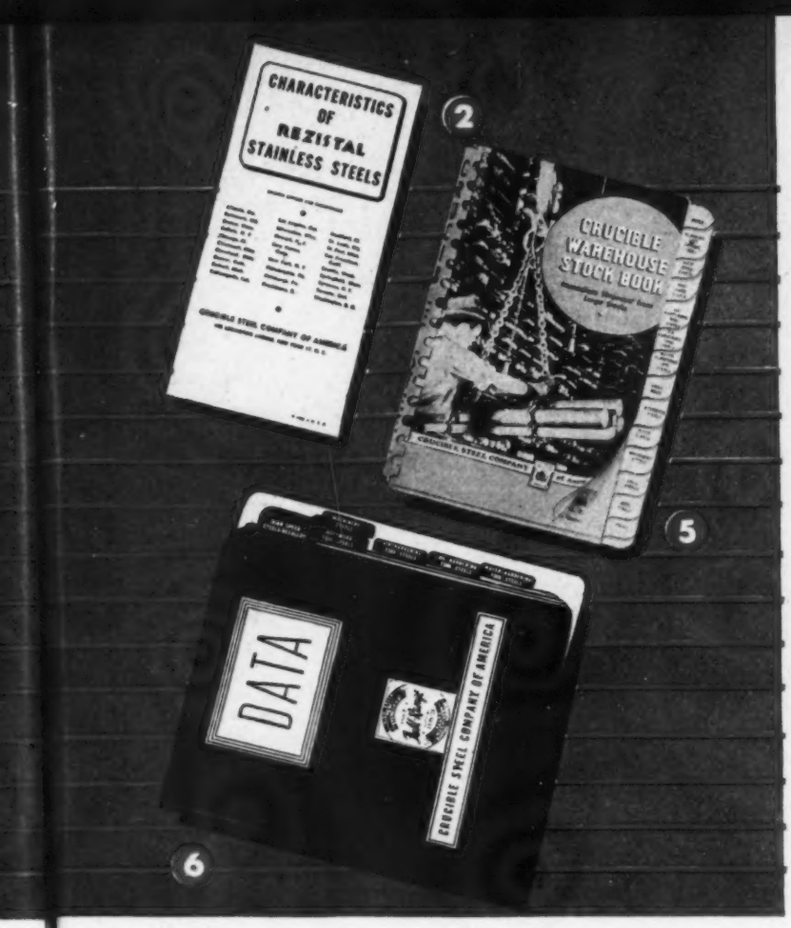

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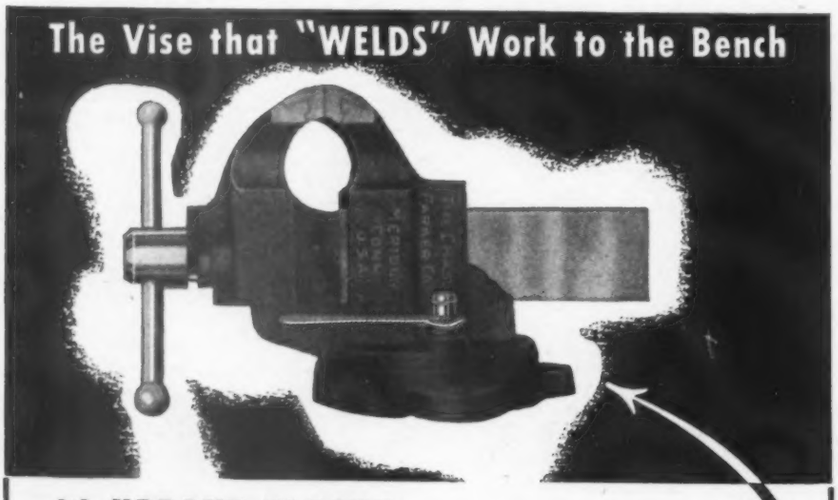

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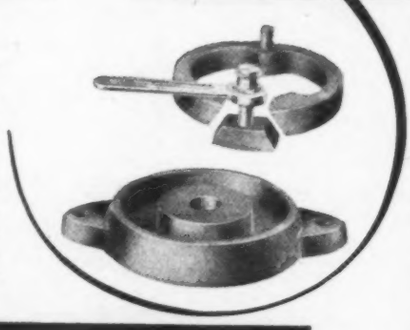


PARKER VISES

America's First Vise Maker

Buying Coated Fabrics

(*Continued from page* 105)

to 100 psi. against the surface of the fabric. Any penetration by the water and any leakage through the fabric will cause the gage pressure to drop.

Tabor Test. This tests resistance to the actions of abrasive material. A sample of the fabric is placed flat on a table. Rollers having surfaces of specified abrasiveness—there are several standard roller surfaces—rest upon the fabric. The ends of these rollers are joined to a common shaft and the rollers extend from that shaft like the spokes of a wheel. As the common shaft is revolved the rollers roll on the fabric. Since the distance which any section of a roller periphery must travel in a single revolution of the common shaft is governed by the radius distance of that section from the common shaft, and no two of these radii can be alike, the rollers must impose varying amounts of sliding or abrasive motion as well as of true rolling motion upon various areas of the fabric. The pressures of the rollers upon the fabric, the abrasiveness of the roller surfaces, and the number of cycles to which the material is subjected, are varied in accordance with the end uses of the fabric.

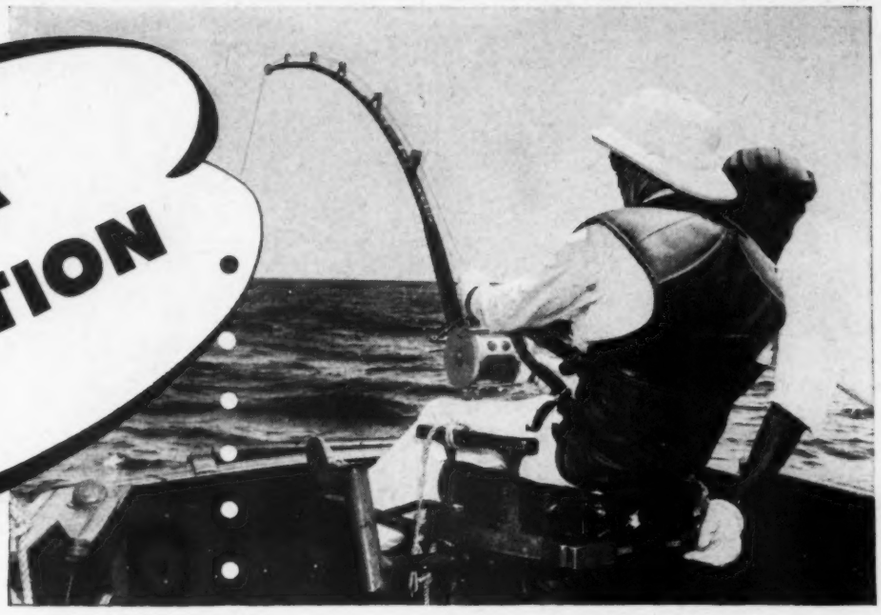
Wyzenbeek Abrader Test. This is a test of the ability of the fabric to withstand rubbing against itself. One piece of the fabric is mounted on the surface of a standard sized drum. Another is clamped by its ends and its surface is brought into contact with that of the first, the pressure between the two being specified. The drum oscillated at a specified speed. The test is maintained for a specified time, or until failure occurs.

Scrub Test. This tests the fatigue resistance of the adhesion of the coating to the fabric, and also tests abrasion resistance and general fatigue resistance. A piece of the material is doubled over so that one area bears against another under a specified weight. The machine then causes the areas to rub together with a reciprocating motion which has specified speed and length of travel. The coating may not break nor lift clear of the fabric during a specified time duration.

Shore Durometer Tests. These tests are for hardness, resilience, plasticity and tackiness. A needle of specified point contours is mounted on a weight and the weight is allowed to fall freely for a specified distance and thus to cause the

(*Continued on page* 230)

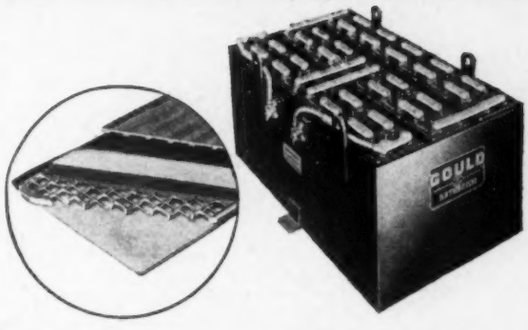
EXTRA PROTECTION



Gould Batteries Give Extra Protection

In Gould Kathanode Batteries all useful active material is retained in the grid

Just as deep sea fishermen wear a special harness to absorb the pull of big fish, so is Kathanode reinforced against the strains of charging and discharging in industrial truck service. For Kathanode this extra protection maintains capacity for the entire service life of the battery.



and here is the Reason why—

In Gould Kathanode each positive plate is faced with spun glass mats, held in place by a porous rubber envelope. This is the famous Kathanode unit. It keeps the active material in place until it is entirely spent, where without this special construction the oxide would flake off before being spent, and settle to the bottom. Prove this yourself by comparing the sediment in a Gould battery with any other battery not having glass mats.

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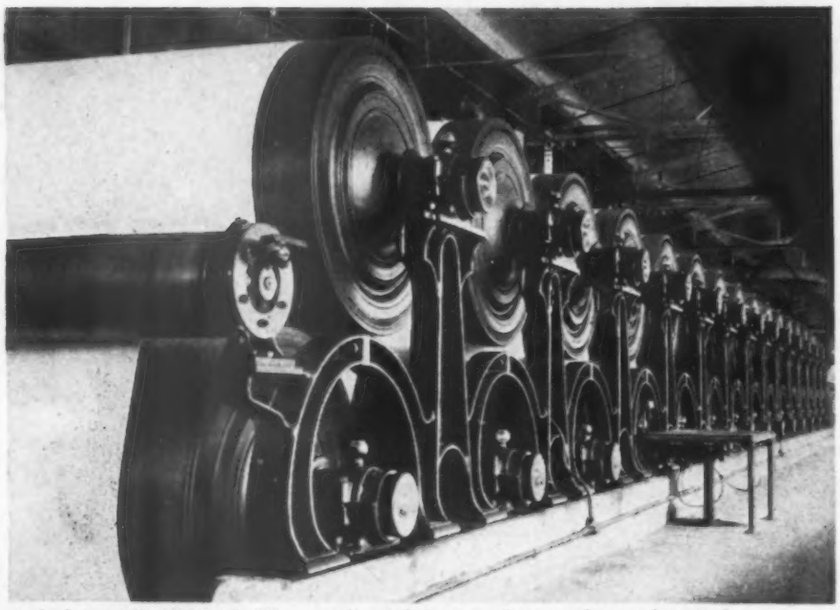

Lunkenheimer "Visible" Bottle Oilers on roller shaft bearings of paper-making machine, Taylor Fibre Company, Norristown, Pa. This machine manufacturers paper for Taylor Vulcanized Fibre and paper-base grades of Taylor Phenol Fibre.

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Fig. 1815—BOTTLE OILER—Globe Body Fully automatic, insures efficient, uniform, economical lubrication of bearing. Feeds oil only when shaft is in motion.

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Buying Coated Fabrics

(*Continued from page* 228)

needle point to penetrate the sample. The height of the rebound of the needle and weight is observed and interpreted. The depth of penetration of the needle point into the material also is observed and interpreted. A hard material may cause high rebound with low penetration, a resilient material high rebound with deeper penetration, a plastic material lower rebound with deeper penetration, a tacky material will exert friction on the needle and reduce the rebound.

The values of many of these tests and of the specifications which may be based upon them depend largely upon the skill of the man who does the testing. But the trend among many of the most technically advanced coatings houses is to do their own specifying by these tests and to encourage the buyer to do likewise.

* * *

Economics — That Dismal Science

(*Continued from page* 112)

Hazlitt concludes his "Lesson" with a sentence that might well become a 20th Century copybook maxim: "To see the problem as a whole and not in fragments—that is the goal of economic science."

There have always been squanderers and wastrels—even the Bible gives instances — but never have there been so many theorists to rationalize their improvidence. Hazlitt uses Bastiat's classic example of the two brothers, Alvin and Benjamin, with some patient additional arithmetic, to discomfort the "new economists" in their assaults on saving.

The vast modern literature accumulated on this subject of Savings includes numerous theories of the "new economists". Many of the ideas that are considered brilliant innovations and advances, are in fact revivals of ancient errors. Frequently they are presented by facile writers whose shallow flippancies pass as devastating epigrams and the ripest wisdom. The copy-book maxims of earlier days contained more sense and a better use of the English language.

There is a widely-held assumption today that "production" and "purchasing power" are two entirely different things. "Production" is thought of as goods; "purchasing

(*Continued on page* 232)

Twin Coach uses Truarc Rings on new bus engine—reduces weight ratio to 1 hp. per 4.7 lbs.

48 WALDES TRUARC RETAINING RINGS ON NEW ROCKER ARM

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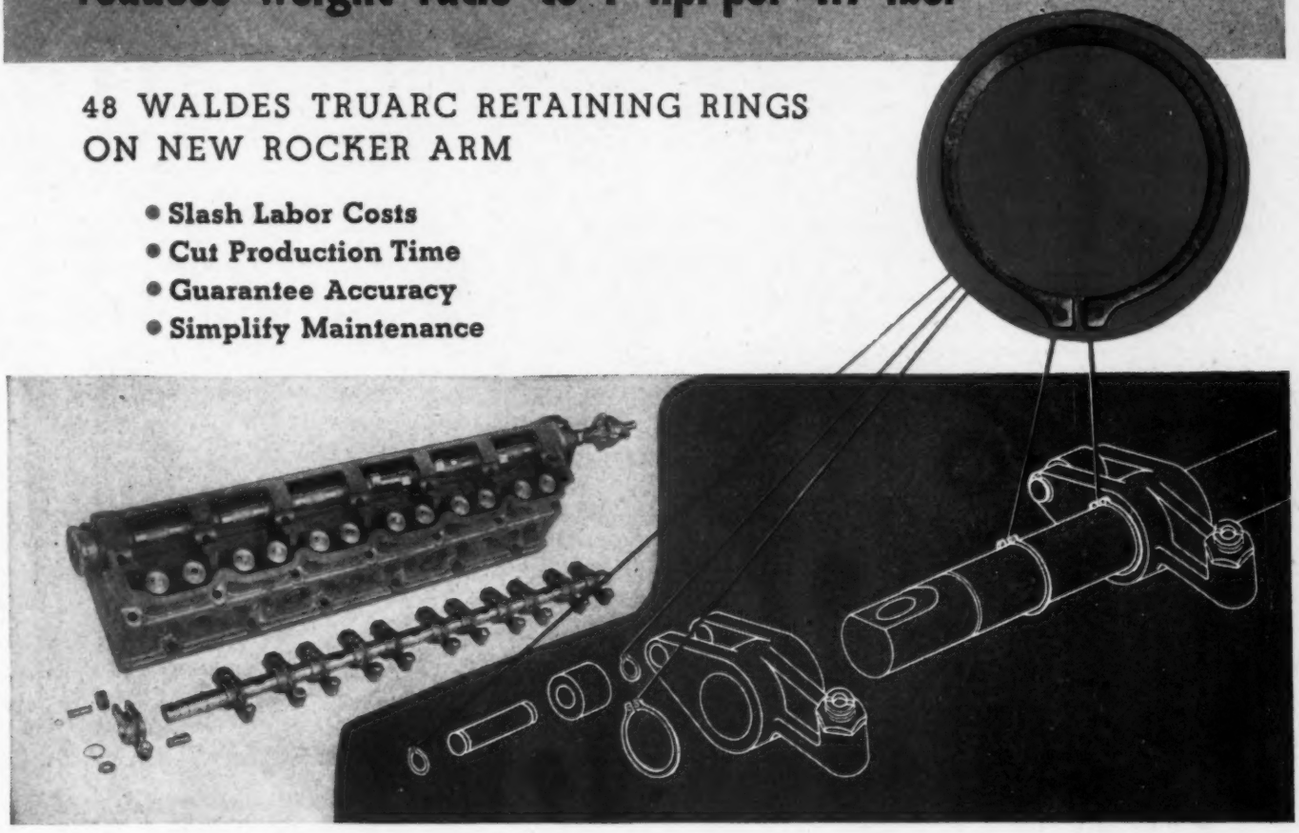

"WE'VE FOUND TRUARC A NATURAL FOR AUTOMOTIVE APPLICATIONS!" reports Twin Coach Company, of Kent, Ohio. Their new Fageol Twin Coach engine uses a total of 52 Waldes Truarc Retaining Rings—48 on rocker arm, 4 on water pump and oil pump drive—to develop the remarkable efficiency of 1 hp. per 4.7 lbs. (the average pre-war gasoline bus engine produced 1 hp. for each 9 lbs., diesel engine 1 hp. for each 10 lbs.)

Automotive designers are specifying Truarc rings in transmissions, clutches, brakes, steering mechanism, and other vital assemblies. Production and maintenance men find that Truarc cuts costs sharply, is a superior solution to fastening problems because of its never-failing grip, its patented design assuring constant circularity. Send us your drawings; Waldes Truarc engineers will be glad to show how Truarc can help you.

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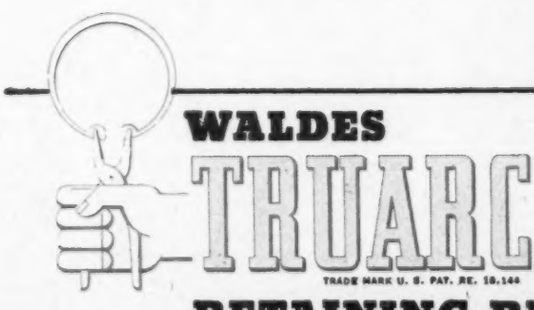

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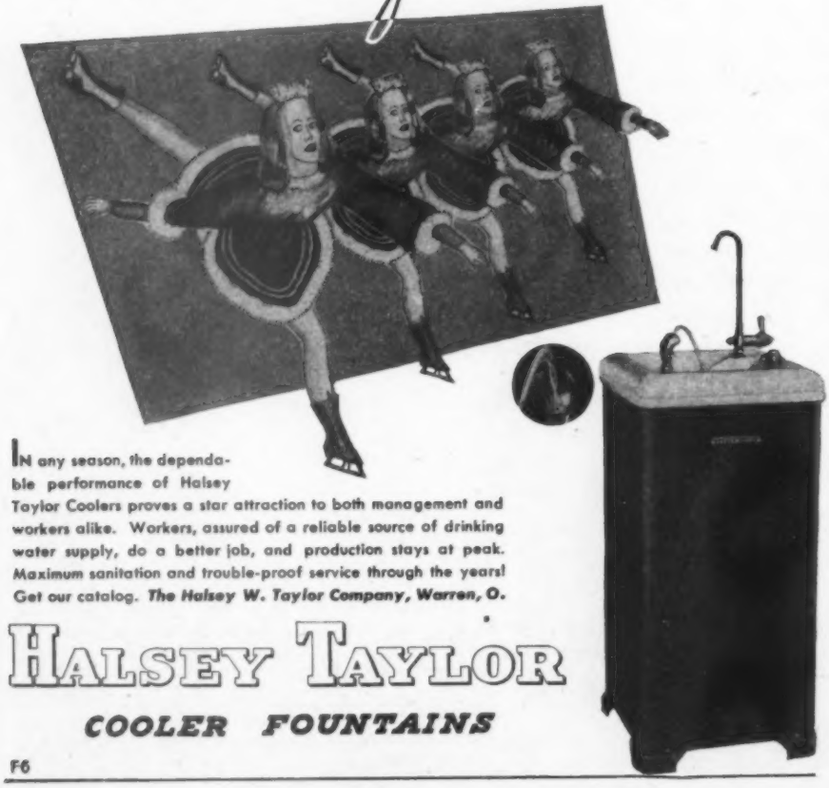

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HALSEY TAYLOR

COOLER FOUNTAINS

F6

Economics—"Dismal Science"

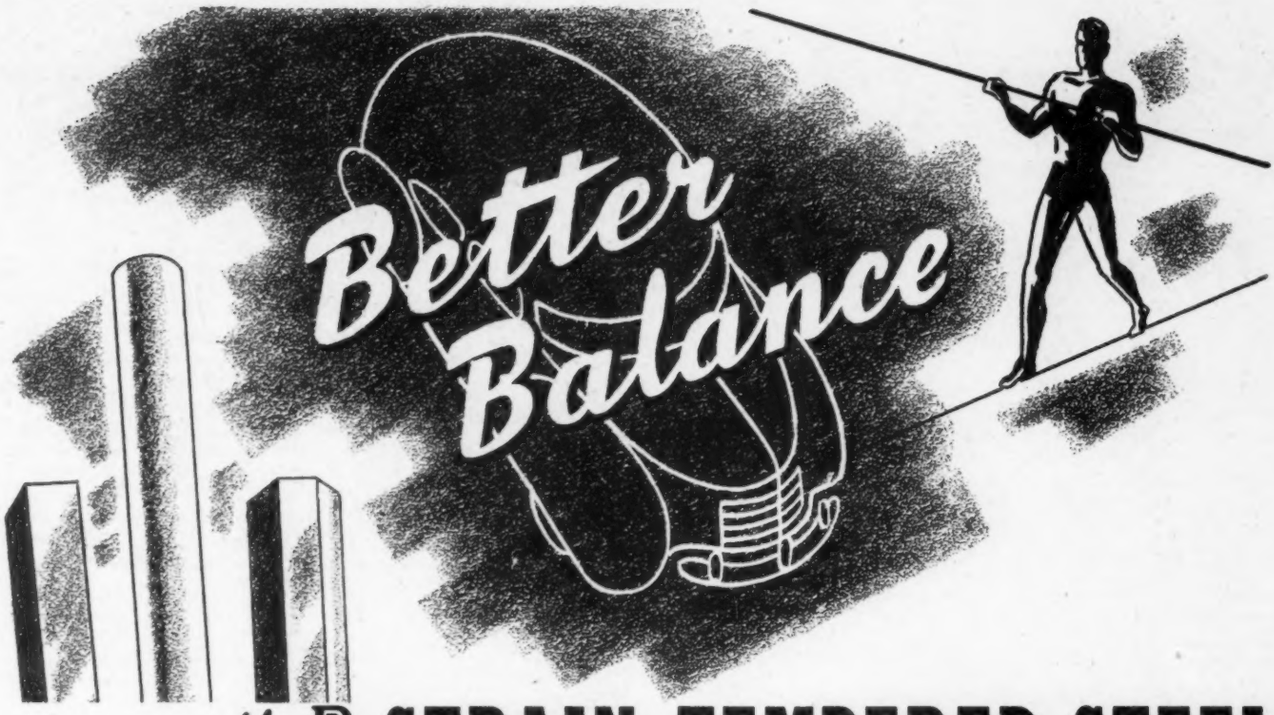
(*Continued from page* 230)

power" as money. Hazlitt proves that purchasing power grows out of production. The great producing countries are the great consuming countries.

The 20th Century world consumes vastly more than the 18th Century world did because it produces vastly more. Supply of wheat gives rise to the demand for automobiles, radios, shoes, textiles and other things that the wheat producer wants. The supply of shoes gives rise to a demand for wheat, motion pictures, automobiles and other things that the shoe producer wants. In our modern world all this happens, not by direct barter, but by indirect exchange through the medium of money. This may complicate the essential process, but does not change it. In the aggregate, supply and demand are not merely equal but identical, since every commodity may be considered either as supply of its own kind, or as a demand for other things. The condition of equilibrium is essential. It is necessary that the proportions between various goods and services must be right, that the price relationships between different commodities must be right. It assumes the existence of free competition and free markets to bring about these proportions and price relations. It is conditioned upon the absence of paralyzing government interference. But these qualifications do not change the central truth of the doctrine.

It is possible to have postwar prosperity and full production when free enterprise and free markets are permitted to bring about the essential conditions of equilibrium. It is senseless to keep pouring money into the spending stream through endless government deficits; that is not the way to sound prosperity but rather the short way to uncontrolled inflation.

It is difficult to resist the temptation of extravagance in praising this little book; but if the reader will take the trouble to read it, he will find a solid package of information —reasoned, competent and illuminating. He will be grateful for light on a subject that concerns him more vitally than he realizes, for the restatement of the fundamental truths of human experience in terms of clear language inexorable logic. Furthermore, it's both interesting and constructive. After learning Hazlitt's "lesson" on economics, he will be able to discount Carlyle's gloomy definition as a revelation of the man rather than the topic.



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New York—Baltimore—Washington Executive Night Meetings

President George W. Aljian, Vice President James Cooney of the Eighth District, and Executive-Secretary George A. Renard of the National Association of Purchasing Agents, completed their visits to member groups of the National with rousing meetings at New York (October 22nd), and Baltimore, Md., (October 25), the latter being a joint meeting with the Purchasing Agents Association of Washington, D. C., whose men's and women's divisions were represented by some sixty delegates.

The over-all theme at these meetings was on getting back to the fundamentals of industrial purchasing and doing a real job of procurement in contrast with what was lightly characterized as an expediting job during the war period. Of particular interest was a warning by Executive Secretary Renard of an imminent chaotic price situation, in which he emphasized that men in purchasing should resist unwarranted price advances.

At the conclusion of the Baltimore

(*Continued on page* 240)

President George W. Aljian of National, President David M. Meeker of the New York Association, and Vice President James Cooney, Eighth District.

Officers and Directors of the Baltimore Association at the joint Baltimore-Washington Executives Meeting.

PHILADELPHIA AND WILMINGTON START PURCHASING COURSES

Under the auspices of the Educational Committee of the Purchasing Agents' Association of Philadelphia, a comprehensive program of education in purchasing is now in progress in that city. Preliminary announcements of the project received such an enthusiastic response that plans were laid on the basis of four basic courses in "Purchasing Policies and Procedures" and two advanced discussion groups on "Purchasing Policies and Administrative Problems, with emphasis on techniques of How to Buy". Registration in each group was restricted to 30 students. Participation in the advanced courses was confined to association members; in the basic courses to personnel from member companies, not more than six from any one company.

Registration fee was set at $25 for the advanced course, including dinners and copy of Lewis' "Selected Case Studies"; $10 for the basic course, including text. The association is underwriting the difference between the fee and the actual cost of presenting the courses. Full registration was promptly made for all four sections of the basic course, with 120 men, and 52 registered for the two sections of the advanced study.

The courses got under way during the week of October 21. Two of the basic courses meet on Monday evenings, and two on Tuesday evenings, from 7:30 to 9:30, in conveniently located high schools. The classes will meet every week for 20 weeks. The instructors are: Prof. Miles E. Hoffman of the School of Business and Public Administration, Temple University; Prof. V. S. Karabasz of the Wharton School of Finance and Commerce, University of Pennsylvania; Robert M. Liversidge, purchasing agent of the Lehigh Coal & Navigation Co.; and Morris H. Merritt, purchasing agent of John T. Lewis & Bros. Co.

The advanced courses are held every other week at the Bellevue-Stratford Hotel, starting with a dinner at 6 o'clock, followed by the forum, which adjourns at 9:30. The courses will run for ten sessions. Moderators for the two classes are H. F. Jones of E. I. du Pont de Nemours & Co., and John K. Conant of the American Viscose Corporation, both of Wilmington. Discussion subjects are selected in advance by vote of the class members, and the plan of procedure is to have brief introductory talks by qualified speakers, outlining significant aspects of the evening's topic, followed by an hour of round table discussion, questions, and comment. The opening

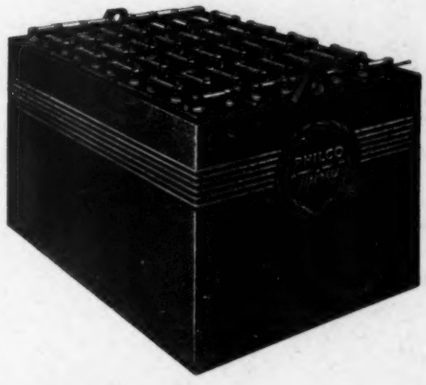
(*Continued on page* 242)

ELECTRIC TRUCKS PALLETIZED LOADS PHILCO BATTERIES*

* With the Modern 10% Extra Capacity Feature

A development which has brought greater efficiency and lower costs to many users of electric trucks is the extra capacity storage battery. Pioneered by Philco, this modern improvement in batteries provides 10% or more additional capacity with no increase in overall battery size. Equip now for heavier work schedules. Write today for new catalogs giving specification data on Philco extra capacity Types XL, XVL and the famous Philco "Thirty" . . . the battery with 30% longer life.

Philco Corporation, Storage Battery Division, Trenton 7, New Jersey



PHILCO FOR 50 YEARS A LEADER IN INDUSTRIAL STORAGE BATTERY DEVELOPMENT

Seattle Women's Group Holds Annual Anniversary-Salesmen's Night

Over a hundred members and guests attended the annual Anniversary-Salesmen's Night sponsored by the Women's Group of the Purchasing Agents Association of Washington, Seattle, Wash., which was held at the Gowman Hotel, Seattle, on October 3rd.

Honor guests were Mayor and Mrs. Devin; and Guy Fredericks, President of the Purchasing Agents Association of Washington. Mr. Fredericks made a few comments to which Frank Carson responded on behalf of the salesmen. Mayor Devin also made a short talk.

The principal speaker for the evening was Linton P. Bennett, whose topic was "Something for Nothing." Entertainment features of the meeting included: Dinner music by accordion trio; vocal numbers; and community singing.

Purchasing Agents Organize at Wichita, Kansas

The Purchasing Agents Association of Wichita with an initial enrollment of approximately 35 members has been organized at Wichita, Kansas, with the following officers.

President, Del Roskam, Cessna Aircraft.

Vice President, Harold Fryar, Coleman Co.

Vice President, James Duncan.

Secretary-Treasurer, Neil McCormick, Boeing Airplane Co.

National Director, John M. Pierce, City of Wichita.

Alternate Natl. Dir., W. W. Grisamore.

Committee chairmen are as follows:

Constitution and Bylaws, B. I. Marshall, Farm Credit Administration.

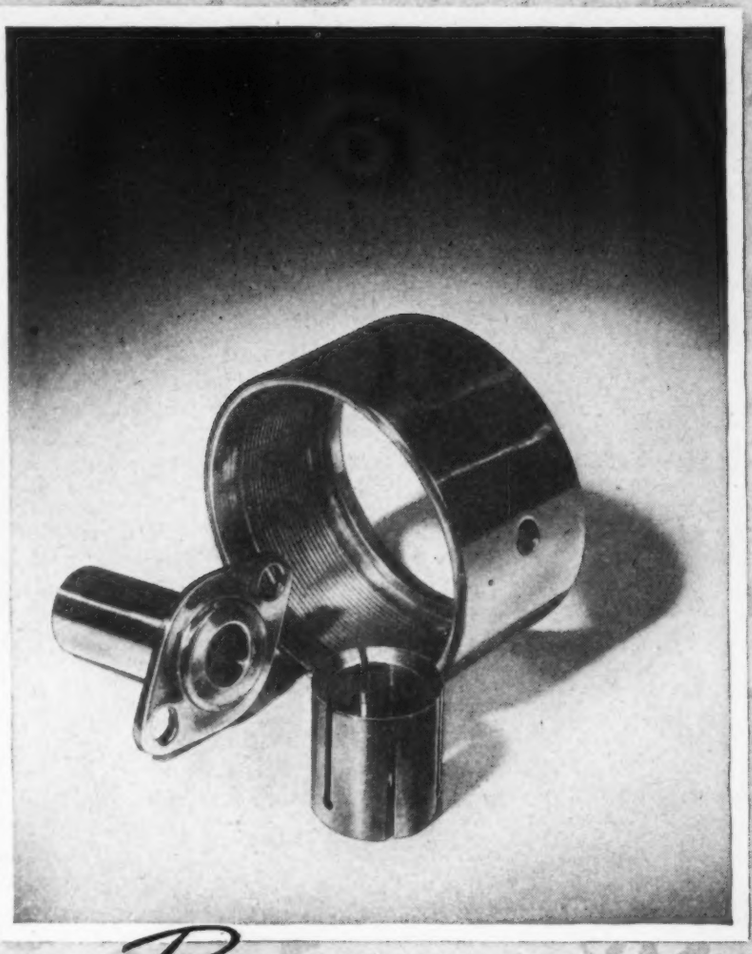
Membership and Eligibility, Dale Corbin, Kansas Gas & Electric Co.

Program, Thomas Madgen.

Meetings will be held on the first and third Thursdays of each month.

Here are the 35 charter members at the first meeting of the Wichita Association.

Secretary-Treasurer of the Wichita Assn., Neil McCormick and President Del Roskam.



Bronze Bearings do not rust or deteriorate in storage. Bunting Cast Bronze Bearings can be withdrawn from stock and installed with the assurance that quality is unimpaired by lapse of time. Our engineers are qualified to assist in your bearing design. The Bunting Brass and Bronze Co., Toledo 9, Ohio. Branches in Principal Cities.

Bunting

54

BRONZE BEARINGS ☆ BUSHINGS ☆ PRECISION BRONZE BARS

WALWORTH

Pressure-Seal Valves

The greatest improvement in high-pressure, high-temperature valve design

LOOK AT THESE ADVANTAGES

1. BONNET TIGHTNESS
2. NO BONNET BOLTS OR WELDS
3. IMPROVED YOKE DESIGN
4. EASILY AND QUICKLY ASSEMBLED
5. EASILY AND QUICKLY DISASSEMBLED
6. DISC TIGHTNESS
7. IMPROVED GUIDE
8. STREAMLINE FLOW DESIGN
9. EASY TO CLOSE
10. EASY TO OPEN
11. VALVE STRONGER
12. WEIGHT REDUCED
13. SPACE REDUCED

WHY?

Because the fundamental principle of the design of the Walworth Pressure-Seal Valve is such that the internal pressure makes the body-to-bonnet joint tight. This tightness extends over the range of all practical conditions, including "carry-over", sudden changes of temperature, and sudden changes of pressure.

The body-to-bonnet joint is easily disassembled and assembled in a minimum of time, reducing the period the pipe line is out of service.

Valve maintenance is reduced to a minimum.

These valves have a semi-flexible disc which compensates for changes in the body shape due to temperature and pressure variations.

An improved guide extends over the entire travel of the disc, making the Walworth Pressure-Seal Valve easier to open and close.

Valve ports and guides are designed to give streamline flow.

The strength of Walworth Pressure-Seal Valves is greater than that of previous designs, even though the weight is reduced approximately 50 per cent.

Walworth Pressure-Seal Valves are now available in the following sizes: Series 900 — 3" and larger; Series 1500 — 1" and larger.

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valves and fittings

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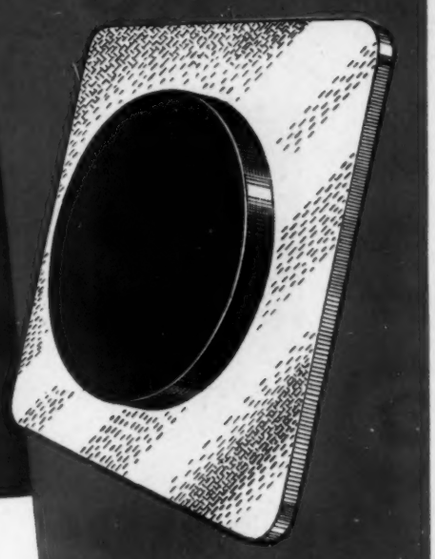
DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

ORCO

Quick-Clip

fastens rubber to metal

Quick as a wink



"Quick as a wink" is the way rubber is locked to metal with the ORCO *Quick-Clip* method of fastening.

Note the integral stem on the molded rubber part. The stem goes through a hole drilled in the metal. A metal clip slips over the rubber stem. Presto! The rubber part is fastened to the metal *permanently*. (No tools needed.)

The number and position of stems on a molded rubber part are dependent upon the size, shape and other factors relating to the specific rubber and metal parts to be fastened. Likewise, the design, size, and shape of the metal clip is subject to numerous variations to meet specific conditions.

Furthermore, the ORCO *Quick-Clip* method is not restricted to molded rubber parts. Under certain conditions, the method has practical application to extruded rubber parts.

Speed of application and permanency of fastening rubber to metal are two chief advantages of the ORCO *Quick-Clip* method.

Although numerous conditions still call for the usual ORCO rubber-to-metal bonding processes, the new ORCO *Quick-Clip* method extends the scope of rubber-to-metal applications.

Inquiries for further information are invited but present conditions make it impossible to make definite delivery commitments.

THE OHIO RUBBER COMPANY

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Factories: WILLOUGHBY, OHIO • LONG BEACH, CAL. • CONNEAUTVILLE, PA.

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"BEST VALUE FOR THE MONEY"

SUNROC
Water Coolers

This Sunroc Water Cooler—Model NM3B—is specially designed for installations where demand is heavy, with operating temperatures normal. It delivers 15 gallons of cooled drinking-water per hour; is equipped with two bubblers and a glass-filler.

In a highly competitive field, Sunroc Coolers have won and held the reputation of offering "the best value for the money." Lowest cost per year—proved by performance—is the all-important factor that has sold Sunrocs by the thousands.

Business, industrial, and institutional users, now selecting from Sunroc's full post-war line, buy with an eye to sound long-term investment. Most Sunroc Coolers are now available in a wide range of modernly styled AC and DC models. Your Sunroc dealer is ready to survey your needs, install the coolers you require. Write Dep't P-12, Sunroc Refrigeration Company, Glen Riddle, Pa.

"There's nothing like a cool drink of water"

SUNROC
Water Coolers
GLEN RIDDLE, PA.

Deliberation—George A. Renard, George W. Aljian and Charles L. Sheldon at New York meeting.

(*Continued from page 234*)

meeting. President Wm. J. Young of the Baltimore Association, presented Mr. Aljian with a copy of the "Manual on the Origin and Development of Washington", on behalf of the Washington Association, autographed by members of that association, and on behalf of the Baltimore Association, a copy of "Maryland Main and the Eastern Shore", autographed by members of the Baltimore association.

President E. W. Meeker presided at the New York meeting, with an attendance of approximately 250, and President Wm. J. Young presided at the Baltimore meeting which had an attendance of about 150.

National Membership 9850

Vice President J. A. Cooney, in a short address reviewed the organization of the National Association, its division into districts, and membership representation from the "bottom-up" through the local national directors. In 1930, the National association had 5100 members; in 1940, 5500; and on September 1st, 1946, the roster showed a total of 9850 members. Since V-J Day the membership has increased 537, and from May 1946 to September 1st of this year, the increase was 150 members.

Commenting upon the growth of the local and National bodies, and the growing recognition being accorded men in purchasing, he said: "Something happened during the war. Perhaps the purchasing profession has been "sold" to management because of sheer achievement. We are holding our gains, and we are adding to them.

"As to the benefits to be derived from the National Association", he continued, "you of course must be the judge as to whether it is worth while. The Bulletin alone is worth three times the amount I pay in dues.

Hold the Line

Executive Secretary George Renard of the National Association in one of

(*Continued on page 246*)

From Washington by Bus—Secretary A. W. Alexander and President C. Irving Hanson of the Washington Association, President M. Byrne of the Washington Women's Division, and Clifton E. Mack, Director of Procurement, Procurement Division, Treasury Department.

Have Sweep-Vision Lens

Provide Protection against Chemical and Dust Hazards

The new A-O Rubber Frame Goggle has a single large acetate lens which provides exceptional wide-angle vision. Frame is molded from non-irritating, acid-resisting synthetic rubber, which will stand up under long, hard wear. It is scientifically designed to conform to face contours, providing an acid- and dust-tight fit. Cushioned and ventilated for maximum comfort. May be worn over personal prescription glasses. Especially recommended for maintenance men on acid lines and storage batteries; for workers on metal plating baths, foundry shake-out, railroad car and coal handling apparatus cleaning, and in ship holds and engine cabs where dust is a dangerous factor. Send for bulletin which fully describes the various outstanding features of this new A-O development.

American Optical
COMPANY
Safety Division

SOUTHBRIDGE, MASSACHUSETTS
BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

• Picking up a load and placing it on the exact right spot is only as efficient as the crane that lifts and carries and lowers its cargo.

Balanced drive gears with automatic oil bath lubrication—permanent alignment—anti-friction bearings—give Shepard Niles cranes precision control operation and more dependability under constant load handling. Shepard Niles cranes are designed and built for tough, long service with a thorough knowledge of the performance expected of them.

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Our staff of engineers are ready today to help you to plan a better, more economical handling system. Write them.

For smooth, constant, dependable lifting and handling, select a Shepard Niles hoist. The completeness of the Shepard Niles line of electric hoists permits the selection of the most efficient lifting and load-moving equipment for any requirement.

Shepard Niles
CRANE & HOIST CORPORATION

462 SCHUYLER AVENUE • MONTOUR FALLS, N. Y.

(*Continued from page* 234)

sessions, on October 28 and November 5, were devoted to the topic "Profits from Purchasing". Speakers at these sessions were E. P. Scully, director of purchases, Engineering & Research Corp., Riverdale, Maryland; E. H. Hawkins, director of purchases, E. I. du Pont de Nemours & Co., Wilmington, Delaware; and S. F. Heinritz, editor of PURCHASING, New York.

The Educational Committee of the Philadelphia Association consists of John K. Conant (chairman), George L. Herzog, H. F. Jones, Morris H. Merritt, and A. H. Reynolds.

A similar program is under way at Wilmington, under the auspices of the Educational Committee of the Wilmington Industrial Buyers Group, also headed by Mr. Conant. It includes two basic courses, led by Charles N. Lanier, Professor of Economics and Business Administration, University of Delaware, and one advanced course. All classes are held in the Assembly Room of the Dupont Company. In the absence of association subsidy, the fees in this case are $25 for the basic course and $45 for the advanced course. Registration totals 44 in the basic courses and 23 in the advanced seminar.

By means of these facilities, 239 purchasing men in the Philadelphia-Wilmington area will be regularly engaged through March in the study of purchasing problems and policies—unique and striking evidence of the interest and serious purpose of these industrial buyers in the advancement and performance of their function.

* * *

FUNCTIONING OF PURCHASING MILWAUKEE MEETING

The Milwaukee Association of Purchasing Agents held its November meeting at the Rainbow Room of the Hotel Racine, Racine, Wisconsin, on the 12th. C. E. Krause, secretary and manager of Procurement and Supply of Massey-Harris Co., Racine, Wisc., spoke on the topic of "The Comprehensive Functioning of Purchasing". Plant visitations were also resumed for the first time since the war with members visiting the Walker Manufacturing Co., and the S. C. Johnson Co., both in Racine.

The October meeting, held at the Milwaukee Elks' Club, Milwaukee, Wisc., on the 8th of October, heard Mr. Forrest Nagler, Chief Mechanical Engineer for the Allis Chalmers Manufacturing Co., talk on the subject of the "Fifth Atomic Bomb". Mr. Nagler was an eye-witness to the last Bikini Lagoon test, and gave a vivid picture of his experience in observing the much publicized experiment. Highlights both in the development and ultimate results of the bomb were discussed insofar as secrecy restrictions would permit. At that meeting Gunnard Odelberg, of Vincent McCall Co., and R. E. Thomas, of Dumore Co., were accepted as active members. Du Wane J. Busse, of Durant Mfg. Co., and Edmund A. Koepke, of Lakeside Bridge & Steel

(*Continued on page* 244)

WHICH BEARING WILL WEAR THE LONGEST?

They're all exactly alike in size, shape and quality of bronze. But there's a mighty important invisible difference—the *alloys*.

That slight change in composition—often only a fraction of one per cent—can make a huge difference in service. Through years of research N-B-M has perfected scores of "minor" variations for different requirements which give bronze bearings and parts far longer life.

A new N-B-M alloy may be just the answer you're looking for.

N•B•M

BRONZE BEARINGS AND PARTS

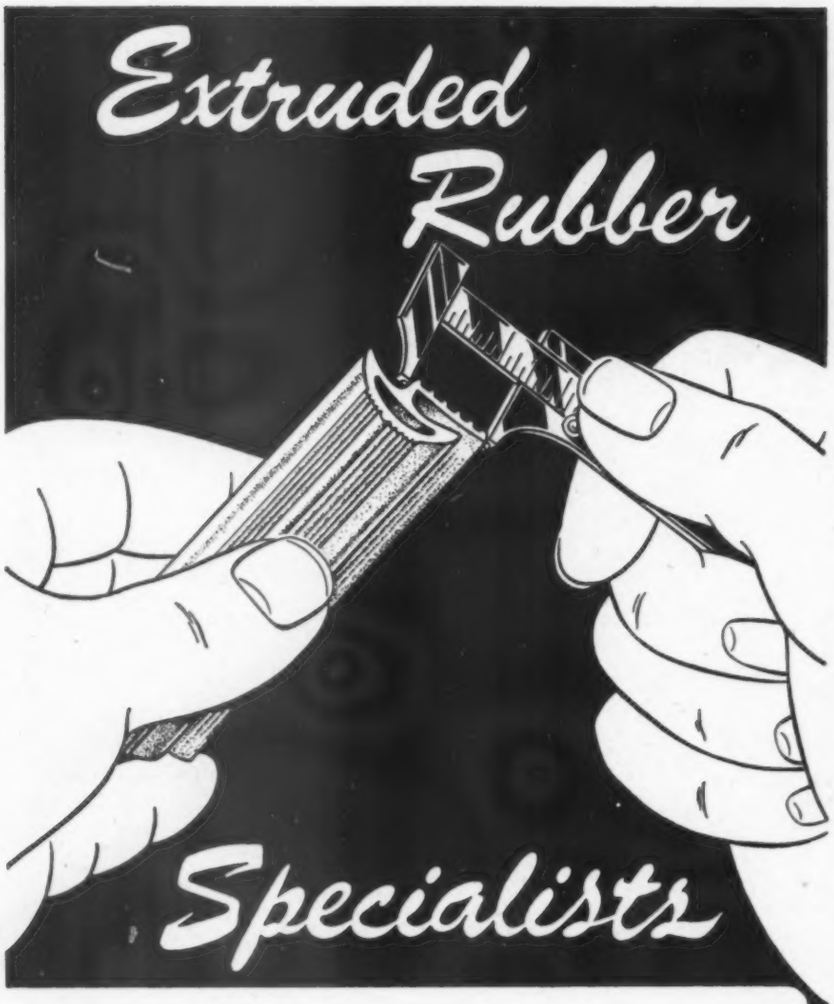
NBM

AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

ST. LOUIS • NEW YORK

PLANTS IN: ST. LOUIS, MO. • PITTSBURGH, PA. • MEADVILLE, PA. • JERSEY CITY, N. J. • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.



ACCURATE measurement is one of many essential requirements in the successful manufacture of extruded rubber. Careful selection of material, proper testing for physical properties, and skillful workmanship must also be incorporated in every step of the processing. Continental is fully qualified by forty years' experience to furnish extruded rubber products to meet your most exacting requirements.

Consult your nearby Continental branch.

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Baltimore, Md.	Dallas, Texas	Kansas City, Mo.	Philadelphia, Pa.
Boston, Mass.	Dayton, Ohio	Los Angeles, Cal.	Pittsburgh, Pa.
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Chicago, Ill.	Greensboro, N. C.	Memphis, Tenn.	St. Louis, Mo.
Cincinnati, Ohio	Hartford, Conn.	Milwaukee, Wis.	San Francisco, Cal.
Cleveland, Ohio	Indianapolis, Ind.	New York, N. Y.	Syracuse, N. Y.

★ *Continental also manufactures molded and lathe cut goods, as well as a complete line of hose, packing and other industrial maintenance items.*

SEE OUR CATALOG IN SWEET'S

CONTINENTAL RUBBER WORKS
ERIE · PENNSYLVANIA · U. S. A.

(*Continued from page* 242)

Co., were accepted as associate members.

Eugene Galdabini and Walter H. Quade, both of Prefex Corp., and Irving M. Temen, Automatic Products Co., were accepted as active members by the Board of Directors, and Elmer R. Hasz, Rundle Mfg. Co., as associate member; and Roy Barrett Miller, Ford Motor Co., Iron Mountain, Mich., as non-resident member, at the November meeting.

"AS I SAW BIKINI" TOPIC AT DAYTON MEETING

Dr. Carroll A. Hochwalt, Central Research Director of the Monsanto Chemical Company, was guest speaker at the Dayton Purchasing Agents Association's October meeting. Dr. Hochwalt, who was a member of the official group witnessing and studying the atomic bomb test, gave a lecture with a colored film entitled "As I Saw Bikini". He opened his discussion with remarks concerning atomic energy and indicated that atomic energy by-products would be available on a commercial basis in the not too distant future. The lecture was a description of the preparation for the bomb test, the actual bombing and a study of the performance of the elements afterwards. The heat wave was felt 18½ miles away. 32,000 tons of shipping sank instantly. 314,000 tons of shipping were heavily and slightly damaged. 10,000 instruments were used to record all the details.

At the same meeting Economist Dr. Henry G. Hodges presented his discussion of "Economic Trends", a regular monthly feature of the Dayton meetings. Dr. Hodges called attention to the possibility of five and ten cent increases in hourly pay and that the uncertainty of control of labor leaders over their membership adds to the confusion that is so prevalent. Steel prices should increase by the first of the year which will be about the time that the I.C.C. authorizes an increase in freight rates, he said, adding that the "break-even" point in steel operations has advanced from fifty to seventy-five percent.

NATIONAL DISUNITY DISCUSSED AT LEHIGH VALLEY

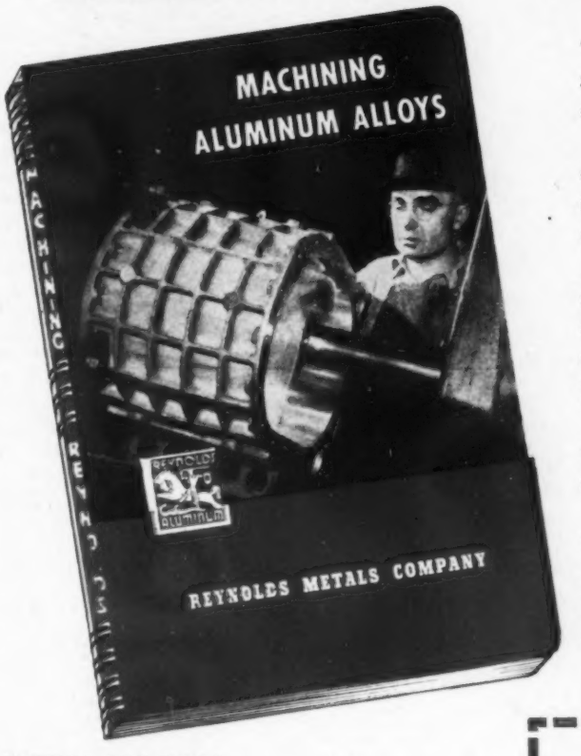
The October meeting of the Lehigh Valley Purchasing Agents Association was held at the Northampton Country Club, Easton, Pennsylvania, with one hundred and twenty-five members and guests present.

Rev. George A. Kreitz, Pastor of Easton's First Reformed Church and a former Marine Chaplain, was guest speaker for the evening. Rev. Kreitz, who saw service in Guam, Okinawa, Pearl Harbor and Japan, decried the lack of unity which, he said, has characterized this country since the end of the war. Disillusioned veterans, who formerly wanted nothing more than to get out of the armed forces, are now seeking to re-enlist to get away from a country and a world which they feel has no economic future.

(*Turn to page* 248)

NEW! ...a process manual on "MACHINING ALUMINUM ALLOYS"

SPECIFIC RECOMMENDATIONS FOR MACHINING OPERATIONS IN COMPACT CHART FORM



There are a lot of practical, up-to-date facts about machining aluminum alloys packed into this new 124-page handbook compiled by the technical staff of Reynolds Metals Co.

For instance, eight double-page charts give specific usable data on tooling, speeds and feeds for eight important types of machining operations: Turning, milling, shaping and planing, drilling, reaming, tapping, filing and sawing.

In addition there are detailed discussions on general machining characteristics of the various aluminum alloys, with chapters on machining conditions, tool materials and designs, cuts, speeds and feeds, lubricants, coolants and cutting compounds.

"Machining Aluminum Alloys" is profusely illustrated with photographs, charts and tables. A fully itemized cross-index serves for ready reference.

This is just one of several recent technical aids put out by Reynolds Metals Company that help bring you up to date on the latest developments in the aluminum industry. Just fill out the coupon below and mail with one dollar. Reynolds Metals Company, 2500 South Third Street, Louisville 1, Kentucky.

"WELDING ALUMINUM"
A new handbook on aluminum welding gives detailed information on 11 aluminum welding processes from edge preparation to finishing. Fully illustrated with photographs, charts and tables. Price: $1.00. (Check space in coupon.)

"ALLOY SELECTOR"
Just two settings to place at your finger tips the mechanical properties, chemical composition, physical constants, thermal treatments, and specification numbers of *18 aluminum alloys.* Price: $1.00. (Check space in coupon.)

"METALS WEIGHT CALCULATOR"
One of the handiest metal weight calculating devices ever developed . . . simple . . . accurate . . . fast. Calculates weights of aluminum, magnesium, steel, brass, copper, and nickel. Only $.50. (Check space in coupon.)

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2525 South Third Street, Louisville 1, Kentucky

Please send me "Machining Aluminum Alloys." I enclose $1.00 (check or money order*) to cover the cost of printing and mailing.

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TITLE_____

COMPANY_____

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CITY_____ ZONE_____ STATE_____

( ) Please send me a copy of "Welding Aluminum." I enclose $1.00.
( ) Please send me a Reynolds Aluminum Alloy Selector. I enclose $1.00.
( ) Please send me a Reynolds Weight Calculator. I enclose 50 cents.

***Please do not send purchase orders, cash or stamps!**

MAKE
your own

with the Roovers Type Embossing Presses and Hand Label Embossers

ADAPTED TO ALL INDUSTRIES

Above — Power Press —This model provides combination of ¼ and ⅜" letters.

THERE are a thousand and one needs of industry that can be filled by these durable metal name plates, tags and labels.

Roovers single- and multiple-line Type Embossing Presses are available with letters from ⅛" to ¾" high . . . any desired wording or length . . . any metal. Hand- and power-operated. Easy to operate. Economical to buy . . . and to use.

Write now for descriptive literature and price list.

Where few tags are sufficient, Roovers Hand Label Embosser is ideal and low in cost. Circular on request.

SPECIALISTS IN METAL TAPES

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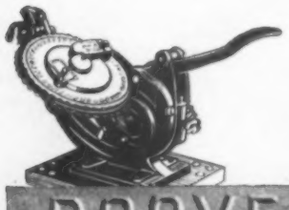


The Hand Label Embosser (above), Hand-operated Model BB (left)

ROOVERS

The Women's Division of the Washington Association headed by President Margaret Byrne was well represented at the Baltimore-Washington meeting.

(*Continued from page* 240)

his pithy "From One P. A. to Another" talks, stated that the next four or five months will see the end of all government controls, and also quoted a Washington authority to the effect that the same period will see the end of all consumer shortages.

"We have learned that increased wages do increase costs", he said in the course of his talk. "It is no longer debatable, not even in the office of the OPA; it is also true in England where they have a socialistic government, and in Russia where they have a communist government. We know that only increased production is a remedy for our situation.

"I believe that decontrol may give us a quick boom, and then a sudden recession—not a bust—and then we will have a good period for a long time to come.

"The important message I want to get over, however, is to stiffen the fiber of the buyer so that he resists all unwarranted price advances whether they are legal or illegal. You will go into a chaotic price situation. Don't weaken!"

How Big is Our Job

President George W. Aljian, gave his hearers much to think about in a talk on "How Big is our Job?" Among other things he recommended that the Eighth District hold conference meetings such as are being held by some of the other district groups of the National.

Baltimore Veterans—A. J. Peroutka and J. H. Gaston.

Commenting on the current status of the purchasing profession, he stated that a goodly percentage of the members of the Association are so-called war P. A.'s that is, persons who have joined the ranks within the past five years. A wonderful job was carried out during the war period, he said, a job of procuring and expediting. However, he warned, men in purchasing must not let their fine war record "go to their head." We must now get back to fundamentals. It has been a long time since we have followed the policy of buying the right thing of the right quality at the right price. Every move we now make must have that as our principle. In the last five years we lived in a world stripped of competition. We were interested only in getting materials regardless of the supplier. Many of us have forgotten how to be buyers. We must rid ourselves of that kind of thinking if we want to get higher up into management.

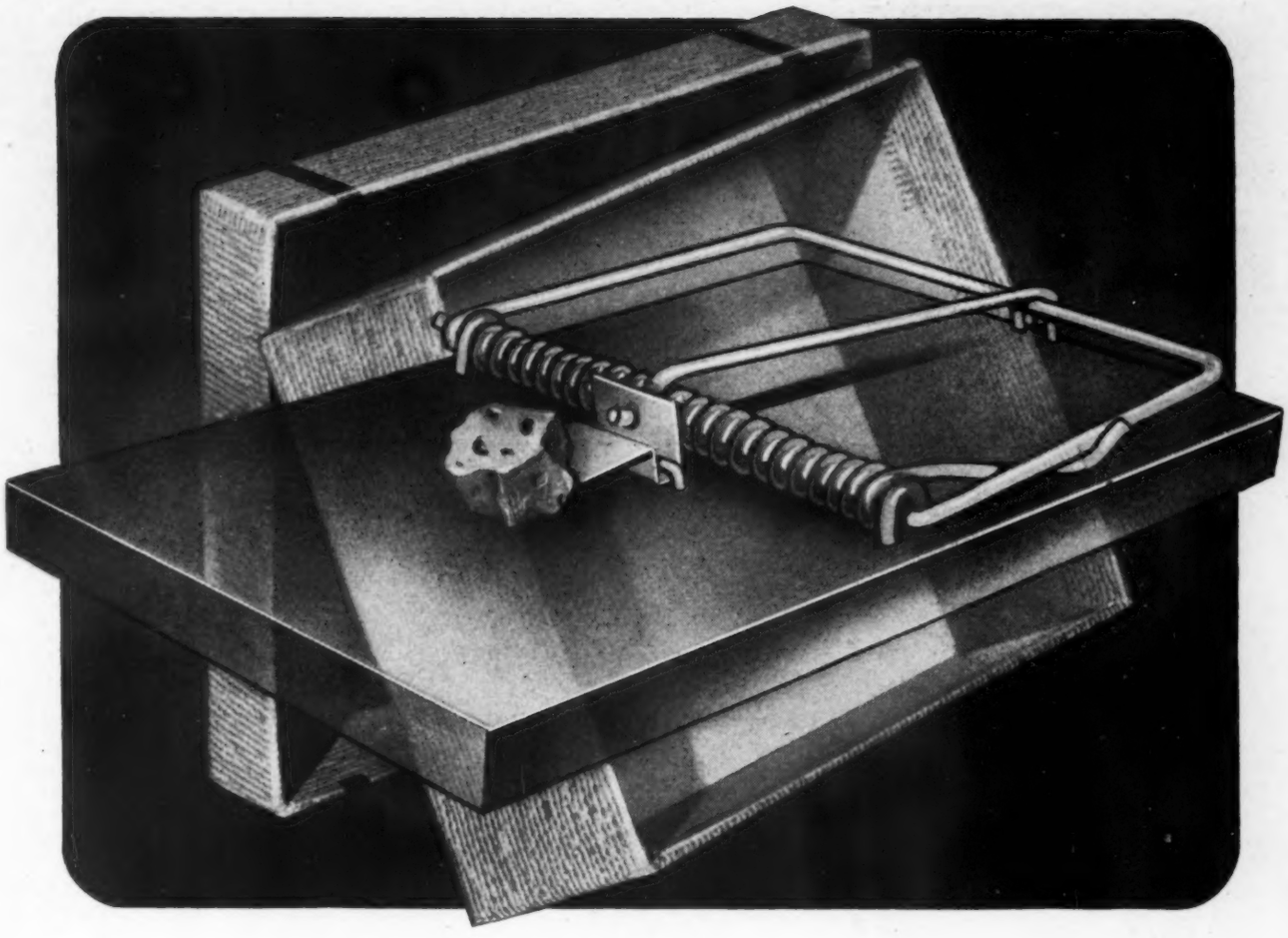
Back to Fundamentals

"Many purchasing men are now doing a clerical job. They receive requisitions; they sort them; they give an order to the supplier who may be the lowest bidder and so on. The important thing is to get back to fundamentals."

"The answer to getting recognition from management", he said, "lies in our finding out what the problems of management are. In other words, to be of help to management, we must know its problems. The answer lies in branching out—purchasing has a peculiar relationship to other departments of the company, and we must learn to fully collaborate with other departments. It is the purchasing agent's responsibility to become thoroughly familiar with the other departments of his company.

"For instance, if the P. A. is buying much packaging and his company does not have a packaging engineer, it is the purchasing agents job to learn all that he can about packaging, for the potential savings are tremendous. The same reasoning applies to material

(*Continued on page* 250)



ARE *you* BUILDING A BETTER MOUSETRAP?

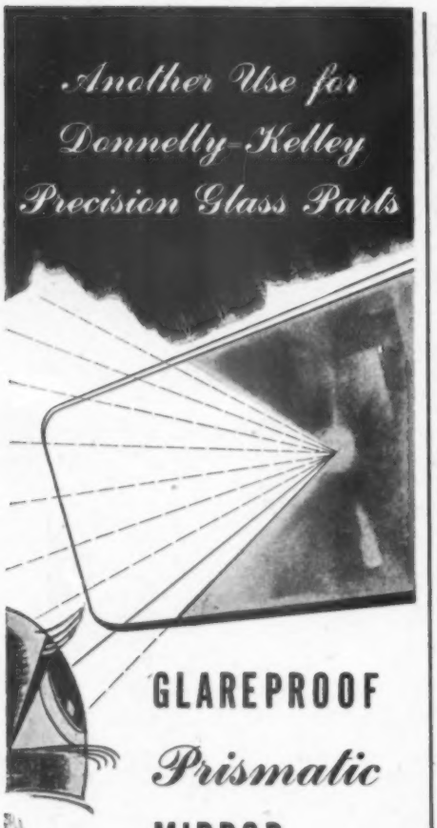
IF so, people may be beating a path to your door - - - but, if you are not making mousetraps, you may be manufacturing some of the other billion and a half dollars* worth of household specialties made in this country each year. Then, you probably rely for sales appeal on some of the 171 million set-up boxes sold to this industry each year. This big business — household specialties — expects an increase in unit sales volume next year of 14% over 1943 high figures. They say they prefer set-up boxes two to one over other containers because:

1. *A set-up box is custom-built to the product.*
2. *A set-up box has greater strength.*
3. *A set-up box sells easier on sight.*
4. *A set-up box gives better product identification.*
5. *A set-up box has added "take home" appeal.*
6. *A set-up box has smart style value.*

*Write to the National Paper Box Manufacturers Association for survey No. 93, "Household Specialties Industry", compiled by the Postwar Planning Committee.

FOR INFORMATION OR SERVICE • CONSULT YOUR NEAREST SET-UP BOX MANUFACTURER

NATIONAL PAPER BOX MANUFACTURERS
Association
AND COOPERATING SUPPLIERS
Liberty Trust Building • Philadelphia 7, Penn.



GLAREPROOF
Prismatic
MIRROR

● This prismatic rear-view mirror deflects 90% glare. Made for the Guide Lamp Division of General Motors Corporation, this piece is an example of the finest quality mirror-surfacing and fabricating that is making Donnelly-Kelley famous for precision glass parts—in the industrial world of today. May we help you, too, with your flat glass problems. We invite you to send us your inquiry.

National Committee on Education Meets in N. Y.

With F. Albert Hayes, chairman, presiding, the Committee on Education of the National Association of Purchasing Agents, and consultants, met at the Waldorf-Astoria, New York, on October 22nd, for the discussion of numerous agenda items, including committee procedures, educational work by the local associations, proposed republication of the N. A. P. A. Handbook, educational matter distributed by the National Office, training programs, and the character of industrial purchasing courses in the curricula of colleges and universities.

Seven members of the committee were present, namely: F. Albert Hayes, New York, chairman; Donald G. Clark, Pittsburgh; G. A. Fay, Cleveland; Stanley W. MacKenzie, New York; E. P. Scully, Washington, D. C.; George W. Aljian, San Francisco; and George A. Renard, national secretary, New York. Two members were absent—Clyde Porter, Birmingham, Ala., and Ben R. Newberry, Dallas, Texas

Consultants present: John K. Conant, Wilmington; Stuart F. Heinritz, editor of *Purchasing Magazine*, New York; Howard T. Lewis, Harvard University, Cambridge, Mass.; Clifton E. Mack, Washington; Robert G. Matley, Detroit; Charles L. Sheldon, Watertown, Mass.; and Fred G. Space, Seymour, Conn.

Guests present were: James A. Cooney, Syracuse, N. Y., vice president, Eighth District; H. W. MacIntosh, national director, New York Association; George L. McCaffrey, Syracuse, N. Y.; Wyman S. Randall of Boston; and E. H. Weaver, Los Angeles.

To increase the effectiveness and scope of the activities of the Committee the subject of its reorganization was discussed, and a motion was approved recommending to the Executive Committee of the National Association that "the structure of the National Committee on Education be enlarged to include the appointment of a district representative by the district vice president and District Council, and the appointment of local representatives to work with the District Chairman in promulgating the program of the Education Committee."

Republication of Handbooks

The outcome of a discussion on republication of the N. A. P. A. Handbooks of Purchasing Policies and Procedures (Volume One and Volume Two), resulted in a formal recommendation to the National Executive Committee that: (1) the handbooks not to be republished without first being fully revised, and (2) that the handbooks be revised and republished bringing them completely up-to-date, only at such time and under such conditions as the Education Committee must decide."

Educational Matter

Secretary Renard stated that numerous requests had been received from schools for Prof. Lewis' book "Selected Cases" and the "Manual for Use with Selected Cases", developed for advance courses, and also from individual members for use in company courses. It was recommneded to the National Executive Committee that the "Manual for Use with Selected Cases" be made available to schools, colleges and others who request copies for educational purposes. Mr. Renard stated that sufficient copies are on hand to meet such requests.

Mr. Renard reported that while no new commodity data sheets had been written, and were not contemplated, work is progressing on Commodity Studies and that these would be available for distribution in the near future.

Editor Stuart Heinritz of *Purchasing Magazine* opened a discussion on the responsibility and duty of the National Committee concerning text matter used by instructors of purchasing and salesmanship in schools and universities. It was felt that the local associations were best in position to make recommendations to professors and deans as to authoritative materials that should be used. In this connection, the National office will distribute copies of Mr. Heinritz's article "The ABC of Purchasing" which appeared in the August issue of *Purchasing Magazine.*

A report prepared by the Education Committee summarizing the responses to a questionnaire survey to determine the extent to which industrial purchasing is included in curricula, showed that 116 schools are teaching purchasing in some form. Sixty-one schools give 78 separate courses in industrial purchasing, and 55 schools include purchasing in various other courses.

The subject of training in "How to Buy" was given considerable attention. Mr. Conant said that "How to Buy" material is to be worked into the educational program being instituted by the Purchasing Agents Association of Philadelphia. At the conclusion of the discussion on this subject, Mr. Scully, Mr. Clark and Mr. MacKenzie were appointed members of a sub-committee of the Education Committee to formulate a program on "How to Buy" education material for consideration by the National Committee.

NAMED ASSISTANT EXECUTIVE SECY. OF NOR. CALIF. ASSN.

Richard H. Krinkel has been named assistant executive secretary of the Purchasing Agents Association of Northern California, according to announcement by Ed Chambers, executive secretary.

NEW ORLEANS WELCOMES FIVE NEW MEMBERS

Five new members were welcomed by the Purchasing Agents Association of New Orleans at their monthly dinner meeting at the Jung Hotel, on November 11. Arrangements have been completed for the association's annual New Year's Eve Party.

(*Turn to page* 250)

. . . For Superior Mechanical and Electrical Performance

Too much cannot be said about the importance of using only the best and most reliable materials for functional parts of electrical equipment. Metallurgical research has brought about the development of modern copper-base engineering alloys with superior properties that give longer care-free life.

The reliable spring properties and high fatigue resistance of Bridgeport's Improved Phosphor Bronze give greater dependability to contact arms, springs and similar parts. For example, it is widely used for contact arms in relays which vibrate rapidly and must endure millions of cycles of flexing.

Where a combination of high electrical conductivity, stiffness and resistance to wear and arcing are required, specify Bridgeport's Cadmium Copper. It has exceptionally high conductivity (85% minimum) and uniformity.

To attain the utmost reliability in switches, relays, condensers, and other parts used in electrical or electronic equipment, design engineers should investigate the properties of Bridgeport's special engineering alloys in addition to the standard brass mill products. They are described in "Bridgeport's Technical Handbook," available upon request made on company stationery.

•

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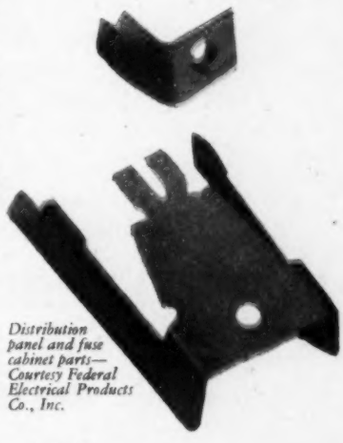
BRIDGEPORT 2, CONN. *Established 1865*



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Warehouse and Jobber Stocks Available for Prompt Delivery

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Milwaukee 2, Wisconsin, 715 N. Van Buren St.
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Cutting BANDS . . .
. . . THAT GIVE
MAXIMUM PERFORMANCE

Millers Falls metal cutting bands are quality-built to meet every modern requirement. They are the result of years of experience in the field on all types of machines and on all classes of work.

Ferrous metals require a wide range of speeds depending on their analysis, while non-ferrous metals and other materials require an entirely different range. For maximum performance, the band must have the proper type of set and form of tooth for the particular metal being cut.

Millers Falls' vast experience and research in metal sawing problems of every description are at your service without obligation. One of our well-posted sales engineers would welcome an opportunity to survey your problems and make some well-worthwhile recommendations. Write, giving full particulars.

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One Thing in Common — Quality!

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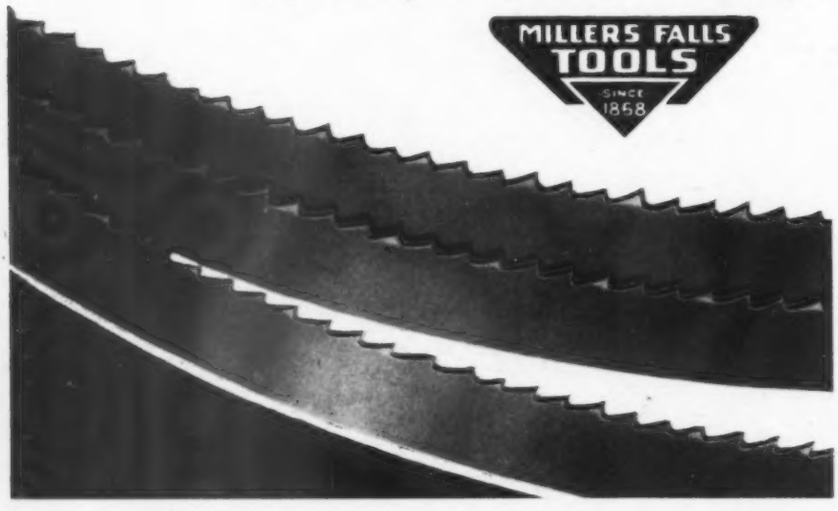

(*Continued from page 246*)

handlings, to the use of substitutes, and all other problems concerning production, operation, maintenance, and even sales.

Concluding his talk he said: "We did a good job of war expediting. But let's do a real job of purchasing from here in."

CANTON ASSOCIATION HEARS TALKS ON EDUCATION

The Canton, Ohio, Association at its regular meeting at the Onesto Hotel, October 16th, heard a report given by National Director M. J. Birzer, Jr., on the recent 6th District Council Meeting held in Cincinnati. The program for the evening, arranged by H. A. Grauman of the Program Committee, consisted of a talk by Raymond M. Schildler, Director of Kent State University—Canton Branch, on the set-up of that institution. Following this Fred Domer, president of the Canton Board of Education, reviewed the situation of the Canton schools with respect to the physical plant and the plans being made for new buildings and improvements on existing buildings. The Canton Association joined with the Akron Association for an Executives' Night Meeting held in Akron on November 1st, where National President George W. Aljian, and Sixth District Vice President Ralph O. Keefer were guest speakers. The Canton Association announces new memberships of James B. Hoon and David B. Abbuhl, both of Hardesty Chemical Co., Inc., Dover, Ohio.

NON-FERROUS METALS, LACQUER PRODUCTION TOPICS AT RHODE ISLAND MEETING

Frank J. DeBisschop, president of the United Wire and Supply Corp., addressed the Rhode Island Purchasing Agents Association at its October meeting in the Narragansett Hotel Ballroom, Providence, on the subject of "Non-Ferrous Metals — World Suppliers Versus Local Suppliers". Also W. I. McGowan, sales manager, Chemical Products Company, spoke on the subject of "Substitution Problems in Lacquer Production", referring to the use of lacquers in plasticizing, particularly in the textile industry. New members admitted to membership at the meeting were: Edward J. Botting, Associated Grocers of Rhode Island, Inc., and Howard L. Snow, Jr., of the Rumford Chemical Works.

CONTINENTAL MOTORS HEAD SPEAKS AT GRAND RAPIDS

C. J. Reese, president of Continental Motors Corporation, Muskegon, Mich., was guest speaker at industrial executives dinner sponsored by the Purchasing Agents Association of Grand Rapids, at the Rowe Hotel, Grand Rapids, October 8th. Mr. Reese, former purchasing agent at Continental Motors, was made president and general manager in 1939.

(*Turn to page 252*)

You Can COUNT ON VEEDER-ROOT to Build "COUNTROL"

into Your Product or Process

. . . with either Standard or Special Veeder-Root Counting Devices

Take a rolling mill, a machine tool, jet plane, juke box — or what have *you?* Odds are long that there's a place ready and waiting, *though perhaps as yet undiscovered*, for Veeder-Root *Countr*ol in your product-design and sales-promotion plans.

And now's the time to find out. Ask a "Counting House" engineer to count up the ways in which you can profit by building into your product or process the right Veeder-Root Device (standard or special) . . . like, for one instance, the standard Medium Size Rotary Ratchet Counter shown above.

Remember, too, that *Countr*ol can profit your customers as well as yourself . . . can help to keep you on friendly terms by proving your product's guarantee. Find out just how much you *can* count on. Write today to Veeder-Root Inc., Hartford 2, Conn. *In Canada:* Veeder-Root of Canada, Ltd., 955 St. James St., Montreal 3. *In England:* Veeder-Root Ltd., Dickinson Works, 20 Purley Way, Croydon, Surrey.

Give your product this extra Merchandising Feature

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Fabricators and Erectors of Structural Steel

More Men Becoming Available Speeds Production

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Now is the time to send your plans to us for quotation!

Fabricating and erecting bridges is one activity where the flexibility of our set-up provides abundant facilities for moving fast.

Fabricating the structural steel and erecting highway bridges is just one of our activities. We also fabricate and erect structural steel for all types of buildings . . . industrial plants, public buildings, churches, apartments, stadiums, and so forth.

Every job gets away to a fast start. Our erecting crews are expert in getting the structure up. It will pay you to investigate all of the advantages you have at Allied where 3 plants operate as one huge fabricator.

If you have new projects under way to be figured, send us the specs when they are ready.

ALLIED *"to Win in War or Peace"*

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FABRICATORS (75,000 TONS CAPACITY)
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Multiplicity of Equipment Breaks Bottlenecks Wide Open!

INTERVIEWING SALESMEN TOPIC AT METROPOLITAN CLUB

Feature of the November 12th meeting of the Metropolitan Purchasers' Assistants Club held in Midston House, New York City, was a forum discussion on salesmen interviews led by C. H. Berry. It was emphasized that there is a great deal of lost motion incident to salesmen's calls for the reason that many salesmen have not acquainted themselves with a company's manufacture and its equipment and material requirements, and that the easiest and most practical way to handle such cases was to give the salesman copies of the company's advertising literature so that he may acquaint himself with its requirements and be able to key his sales presentation accordingly. Also, it was stated that a buyer should be well acquainted with his company's products and production facilities in order to intelligently discuss requirements with salesmen, and to get the most value for each dollar spent. It was also stated that sometimes engineers and others placing requisitions "get hazy" ideas, and it is the buyer's responsibility to be familiar with requirements in order that he meet them to the best advantage.

"We should aim to promote better relationships between seller and buyer" said one speaker. "Right now materials are scarce, and many salesmen are in position to tell us where we can get materials that are in short supply."

It was generally agreed that it is good policy to keep a salesman waiting as little as possible, and even though there may be no immediate interest in his company's products, to at least extend the courtesy of a personal greeting. One speaker expressed the opinion that it was advantageous to both buyer and salesman, to meet in a special reception room where interruptions can be kept at a minimum, and where department heads can be interviewed to discuss special problems.

Guest speaker for the evening was Daniel L. Sinkler, N. Y. District Manager, Eastern Airlines Transport Co., who spoke on "Air Transportation of the Future" and the development of Eastern Airlines. He mentioned some of the problems confronting the Airlines in the re-establishment of pre-war standards of service due to the present shortages in supplies and equipment and the greatly increased post-war demand for air transportation. Illustrating this he mentioned that whereas Eastern Airlines handled about one-half million passengers in the whole year of 1942, that many are now handled in a month. Added feature was the technicolor sound-movie "Flying Fisherman".

New members introduced to the club were: George Turadian, Joseph G. Robson, and Walter Kohlage, A. & M. Karagheusian, Inc., James Dalstrom, M. W. Kellogg Co., Harry Mitnick, E. R. Squibb & Sons, and Mrs. Bess E. Lawrence, Federal Telephone and Radio Corp.

Tentative plans were made for a plant visit to the Ford Motor Corporation at

(*Continued on page* 254)

SIMONDS gives you the right Band Saw to deliver Top Output and Economy in cutting any type of Metal or Plastic

1. REGULAR HARD EDGE BAND SAWS

Simonds Steel Mills produce a special tough alloy steel for these saws. Teeth are sharp, perfectly milled, and set even on both sides of blade, to give clean, easy cutting and long saw life. And joints are welded for equal strength with rest of blade.

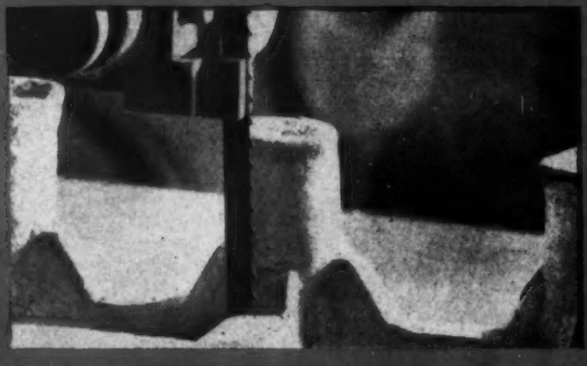
2. SKIP-TOOTH BAND SAWS

Here's the extra gullet-capacity for large chips from aluminum, magnesium, plastics and wood. These saws stay sharp so long that it's economical to replace them and save resharpening. They have the same hardened tooth-edge as the Regular Hard Edge Saws. Made in widths from ½" to 1". Tooth-spacings: 2, 3, 4, and 6 per inch.

3. SPRING TEMPER BAND SAWS

Especially successful in sawing thin sheet aluminum, magnesium, and steel . . . also brass, light structural shapes, plastics, fibre, non-ferrous tubing and similar materials. These blades cut for exceptionally long periods without dulled teeth . . . and then they are quickly reset and filed and put back on the machine.

Consult your Industrial Supply Distributor about the best type and specification of Simonds Band Saw for *your* work. Or write the nearest Simonds office.



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GARMENTS
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ALL TRADES

The apron is style No. K76 — Heavy, oiled duck with a bench high front patch, size 36x48.

The above garments are waterproofed with double-stitched seams and ruggedly constructed for extra wear.

No need for you to look further for waterproofed protective garments . . . Sawyer's has one for every trade. Rainwear that bears the "LIGHTHOUSE" label will assure you that you're buying a garment made from the finest rubberized material available. And if your specifications call for an oiled fabric, our "FROG Brand" has been a leader in the oilskin field for over 100 years. Whichever you buy, the trade-mark guarantees you a garment that has expert workmanship, full measure and top quality.

Write for descriptive folder of our complete rubberized and oilskin line.

THE H. M. SAWYER & SON CO.
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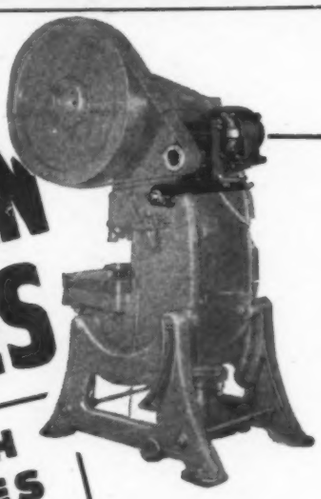
for PUNCH PRESSES



Output of old machines can be stepped up to equal that of new units at low cost. 1800 r.p.m. motors can be used to advantage. Individual Cullman Drives assure top production, greater capacity and better floor layouts.

Cullman Drives are built for heavy duty and long life. They pay for themselves quickly. For motors from ½ to 7½ h.p. Other Cullman Drives increase output of lathes, screw machines, shapers, milling machines and similar equipment now shaft driven.

Get the facts NOW! Write today for full information on Cullman Drives.

CULLMAN WHEEL COMPANY
1352P Altgeld Street Chicago 14, Illinois

(*Continued from page 252*)

Edgewater, N. J. on November 22, and announcement was made of the Christmas arty to be held December 10, which will include dinner, refreshments, and feature three entertainment acts.

USE OF BETTER BUSINESS BUREAU OUTLINED AT BALTIMORE MEETING

The Purchasing Agents Association of Baltimore held its regular monthly meeting November 20 at the Lord Baltimore Hotel, Baltimore, Maryland. G. B. Ussery of the Better Business Bureau was guest speaker and addressed the meeting on the topic of "The Better Business Bureau and How You Can Use It".

JAMES WATT AND DOUGLAS MILLER SPEAK AT PHILADELPHIA MEETING

Two guest speakers were featured at the November 14 meeting of the Purchasing Agents Association of Philadelphia, at the Bellevue-Stratford Hotel, Philadelphia, Pa. James Watt of Johns-Manville Company addressed the forum, presided over by chairman Wesley W. Saatkamp, presenting an illustrated lecture on "Heat and Its Control".

Guest speaker at the regular meeting was Douglas Miller, author and former U. S. Commercial Attache in Berlin, who spoke on the subject of "Free Economy Versus Collectivization".

New members introduced at the meeting were: George E. Evans, Samuel M. Langston Company; F. Herbert Filson, Warren Webster & Company; Joseph S. Jacoby, Jr., RCA Victor Division, Radio Corp. of America; and W. A. Sanders, Philadelphia Gear Works, Inc.

"THE PAPER SITUATION" TOPIC AT MONTREAL MEETING

Third meeting of the season for the Purchasing Agents Association of Montreal was held November 19th at the Mount Royal Hotel, Montreal, Canada. During the afternoon members of the association went on a plant visit to the plants of Marine Industries Limited, Sorel Industries Limited and Sorel Steel Foundries Limited. Those members unable to participate in the visits, which began shortly after noon, participated in a discussion on Privincial Sales Tax Regulations held later in the afternoon.

Guest speaker for the evening was Neil B. Powter, sales promotion manager of Howard Paper Mills Limited, who addressed the association on the subject of "The Paper Situation", involving an up-to-date report on the present paper situation, and its prospects for the future.

(*Turn to page 256*)

PROTECT Your Machine Tool Investment Get Dependable Performance

The Famous Wagner CP Motor

Hundreds of thousands of these motors are today giving unfailing, dependable power on all types of machine tools.

Specify Wagner MOTORS

Machine tools represent one of industry's biggest investments. If the motor on a machine tool fails, production is interrupted. Replacing or repairing the motor costs money. As a result, operating costs go up—production goes down thus affecting your machine tool investment.

You can protect your investment by installing Wagner CP Motors—the totally-enclosed, fan-cooled motor that has two frames . . . an outer frame that guides a strong cooling draft over the motor, and an inner frame completely sealed against the entrance of dust, fumes, moisture, or other damaging elements.

Wagner CP Motors are available in several electrical types and are but one of a widely diversified line of Wagner Motors, all fully described in Bulletin MU-185 free upon request addressed to Wagner Electric Corporation, 6360 Plymouth Avenue, St. Louis 14, Mo.

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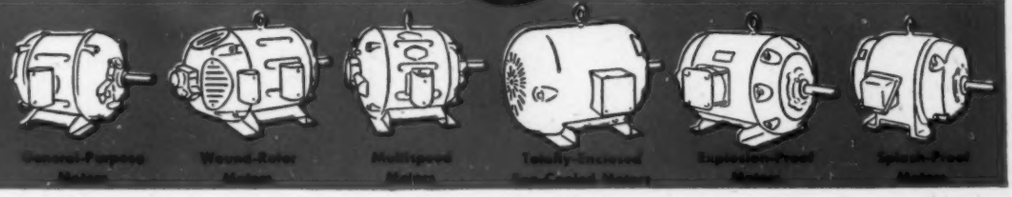


One thumb to a hand

is enough!

A WORK-GLOVE that makes every finger a thumb, makes mockery out of safety! For safety starts with a sure, firm grip . . . a flexibility that allows quick, certain use of the hands in every situation. That's why workers in every phase of industry *like* JOMAC Industrial Gloves. These remarkable gloves make for flexibility right down to the finger-tips!

What's more, JOMAC Industrial Gloves give longer-wearing protection against hand-hazards of every kind . . . biting edges, rough surfaces, blistering heat. There is a scientific reason for this better protection, for the *longer life* you find in JOMAC Industrial Gloves. JOMAC's famous fabric is composed of hundreds of "cushions" . . . protective "air-cells" locked securely into place by a hidden stitch.

Yes, JOMAC Industrial Gloves give *longer life* . . . up to *7 times* the wear of ordinary work-gloves! Washable, they can be laundered repeatedly and used over and over again. That's glove-economy in anybody's language! For full details, write today to C. Walker Jones Co., 6135 N. Lambert St., Philadelphia 38, Pa. Plants in Philadelphia, Pa., Detroit, Mich., and Warsaw, Ind. *Foreign Representatives:* Gillespie & Co. of New York, Inc., 96 Wall Street, New York 5, N. Y.

"SHAKE HANDS WITH SAFETY"

JOMAC INDUSTRIAL GLOVES

THREE TYPES OF JOMAC GLOVES

REGULAR INDUSTRIAL TYPE • HEAT- AND FLAME-RESISTING

SAFETY GAUNTLET-CUFFS

NORTHWESTERN PENNSYLVANIA MEETS AT BRADFORD

Twenty-seven members and guests of the Purchasing Agents Association of Northwestern Pennsylvania attended the meeting held November 7 at the Emery Hotel, Bradford, Pa., at which John C. Armstrong, Professor of Political Science at St. Bonaventure's College and Associate Editor of the Olean Times Herald, presented a review of world affairs, dealing at length with the positions held in world affairs by the United States and Russia.

It was announced that the December meeting, in the form of a Christmas party, will be held December 13th at the Underwood Hotel, Knox, Pa.

CLEVELAND ASSOCIATION OPENS BUSINESS OFFICE

The Cleveland Purchasing Agents Association has opened its new business office in the Terminal Group, 424 Republic Building, 25 Prospect Ave.

It is planned not only to enlarge and improve the services now afforded the members but to add additional services from time to time. The business office will carry on the normal business of the association and will assist in the handling of details for the numerous committees. Among the additional services planned for the future are a Purchasing Agent's Business Survey and lending catalogue library.

The new office is in charge of Jesse R. Stevens, Business Manager, who has had many years of purchasing experience. He is a former secretary-treasurer of the Cleveland Association.

PAST PRESIDENTS HONORED BY TWIN CITY ASSOCIATION

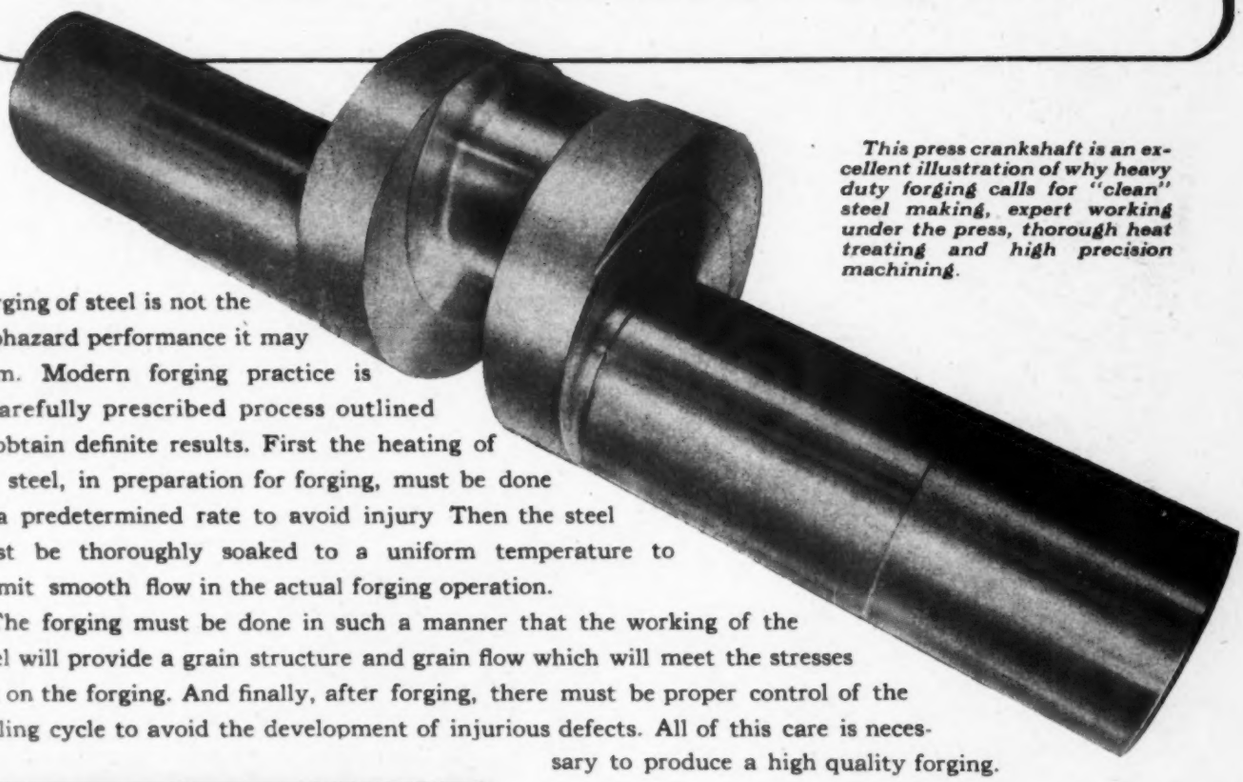
The November meeting of the Twin City Association of Purchasing Agents, held at the St. Paul Athletic Club, St. Paul, Minn., was dedicated as Past Presidents' Night in honor of the men who have served as association presidents from 1919 to 1946. A large number of the association's 27 past presidents attended.

ALABAMA ASSOCIATION VISITS POWER COMPANY UNITS

Continuing their plant visitation program, members of the Purchasing Agents Association of Alabama visited the Gorgas Development of the Alabama Power Company, November 21st. In addition to inspecting the generating and auxiliary facilities of the development, the group also visited the Gorgas Coal Mines which provide part of the plants' fuel requirements .

(*Turn to page 260*)

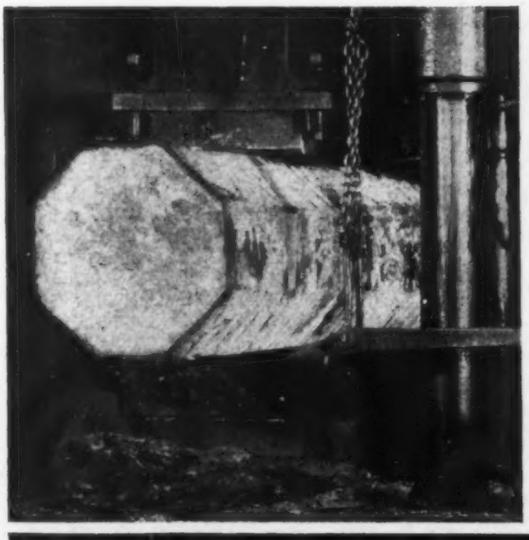
WHAT ABOUT THE *FORGESMITHING* IN THE STEEL *FORGINGS* YOU BUY?



This press crankshaft is an excellent illustration of why heavy duty forging calls for "clean" steel making, expert working under the press, thorough heat treating and high precision machining.

Forging of steel is not the haphazard performance it may seem. Modern forging practice is a carefully prescribed process outlined to obtain definite results. First the heating of the steel, in preparation for forging, must be done at a predetermined rate to avoid injury Then the steel must be thoroughly soaked to a uniform temperature to permit smooth flow in the actual forging operation.

The forging must be done in such a manner that the working of the steel will provide a grain structure and grain flow which will meet the stresses put on the forging. And finally, after forging, there must be proper control of the cooling cycle to avoid the development of injurious defects. All of this care is necessary to produce a high quality forging.



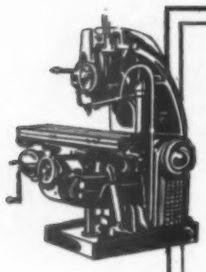
NATIONAL FORGING IS A SKILL OF THIRTY YEARS STANDING

At National every forging presents its own challenge to correct forgesmithing. That is why National Forge is so meticulous in setting up the prescribed procedure which it uses in heating the steel, forging and cooling. It's the long acquired forging "know how" that makes the difference in National Forgings—a difference you should know about now if you have steel forgings to buy.

NATIONAL FORGE & ORDNANCE COMPANY

IRVINE, WARREN COUNTY, PENNSYLVANIA

. . NOW 25% *average*

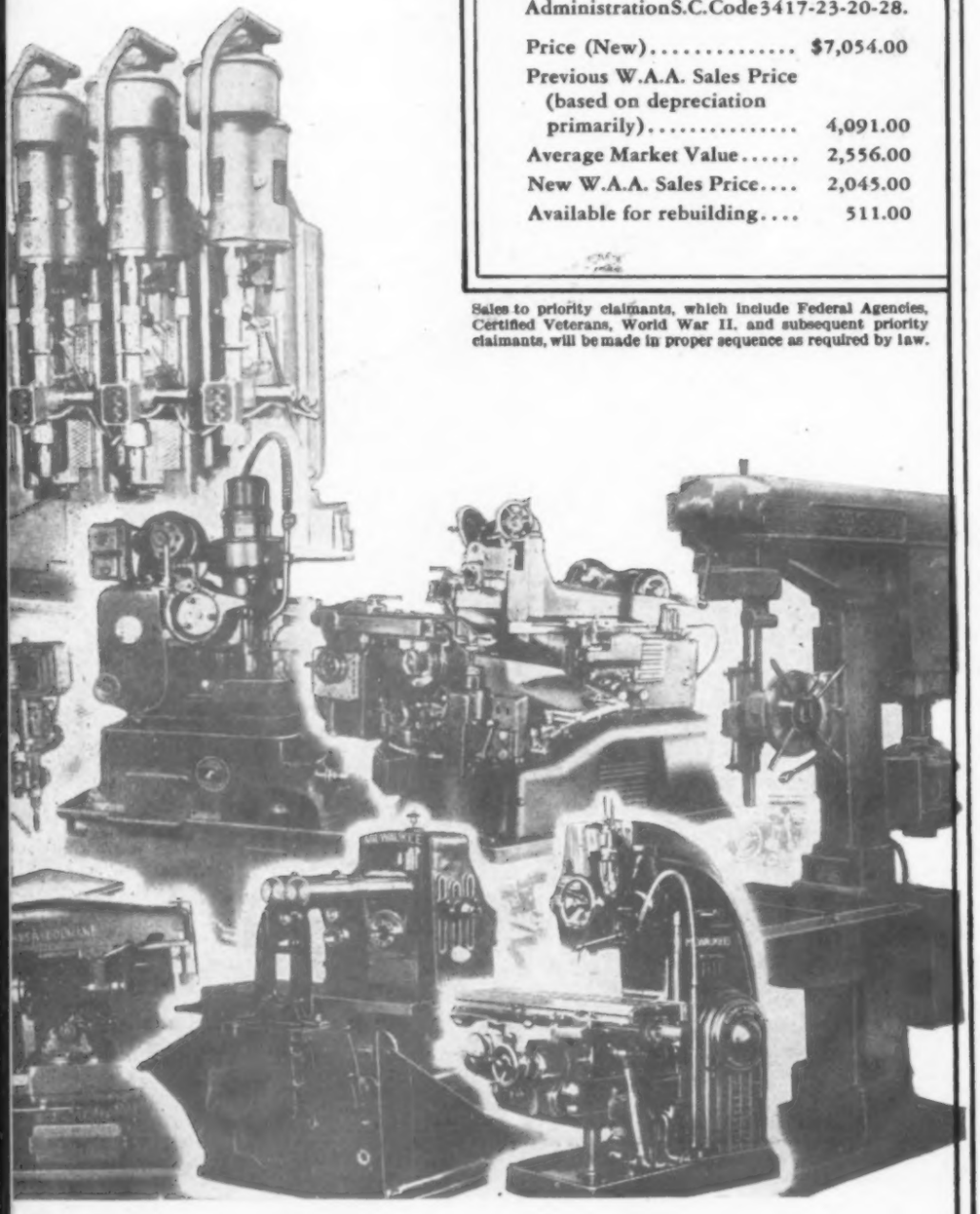


TYPICAL CASE—
MILLING MACHINE

Here is how War Assets Administration's new price has been set for a typical machine; Model 2K Kearney and Trecker Milling Machine, vertical knee action; War Assets AdministrationS.C.Code3417-23-20-28.

Price (New).....	$7,054.00
Previous W.A.A. Sales Price (based on depreciation primarily).....	4,091.00
Average Market Value.....	2,556.00
New W.A.A. Sales Price....	2,045.00
Available for rebuilding....	511.00

Sales to priority claimants, which include Federal Agencies, Certified Veterans, World War II, and subsequent priority claimants, will be made in proper sequence as required by law.



31 TYPES OF GENERAL PRODUCTION TOOLS REPRICED

- Boring Machine—Horizontal, Precision, Bridge Type, Single and Double End
- Chucking Machine—Automatic, Vertical, Multiple Spindle Type
- Chucking Machine—Single Spindle Automatic, Horizontal Turret Type Machine
- Chucking Machine—Six Spindle Automatic, Horizontal
- Drilling Machine or Drill Press—Bench or Floor, Single or Multiple Spindle
- Gear Cutting Machine for Straight Bevel Gears, (Not Planer Type)
- Gear Hobber—Horizontal
- Gear Hobber—Vertical, Universal
- Gear Shaper—For External Spur Gears Only
- Gear Shaper—For Spur Gears, External or Internal
- Gear Shaper—For Spur and Helical Gears, External and Internal
- Gear Tooth Shaver—For External and Internal Gears (Rotary Type Machine)
- Gear Tooth Grinder—Generating Type, for Spur and Helical Gears
- Gear Tooth Grinder—For Spur Gears, External and Internal (Formed Wheel Type Machine)
- Grinders—Centerless
- Grinder—Crank Pin Grinders
- Grinders—Plain External Cylindrical Grinder
- Grinder—Internal, Cylindrical, Automatic Sizing
- Grinder—Internal Cylindrical (Hydraulic Feed Machine)
- Grinder—Internal Cylindrical, Hydraulic Feed, for Hole and Face Grinding
- Grinder—Surface, Rotary Table Type
- Lathe—Multiple Tool, Not Automatic, Manufacturing Type Production Lathe
- Milling Machine—Automatic and Manufacturing Knee Type
- Milling Machine—Plain Bed Type, Horizontal Spindle Machines
- Milling Machine—Vertical, Knee Type (Not Including Bench Type)
- Polishing and Buffing Machine—Bench and Floor
- Profiling Machine—Vertical, Fixed Bed Type, Single and Multiple Spindle
- Tapping Machine—Vertical, Single or Multiple Spindle
- Thread Grinding Machines
- Thread Milling Machine
- Turret Lathe—Ram Type, Plain and Universal

MACHINE TOOL
SALES DIVISION

BELOW MARKET

NEW "FIXED PRICE" POLICY ESTABLISHED ON 31 TYPES OF SURPLUS MACHINE TOOLS

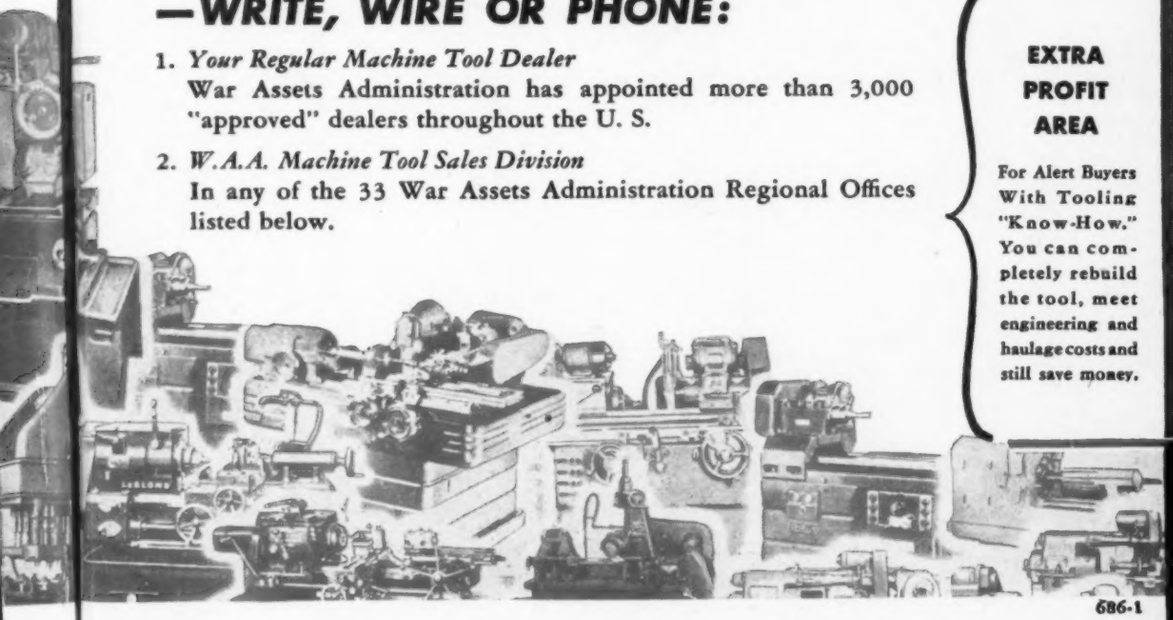
Here is good news indeed for the man who is trying to purchase general purpose production tools for replacement, reconversion or new enterprises. Now you can go into any of War Assets 33 Regional Offices, any machine tool site sale in the United States, or any approved War Assets Administration dealer and buy at the same fixed price, everywhere, the tools in these 31 groups listed at the left. No waiting for complicated figuring of prices, checks against priorities or other delaying factors. The tools are available in such quantity that your purchase can be cleared on the spot, and immediate delivery arranged.

But even more important is the principle under which the new low prices have been set. As the scale at the right indicates each price takes into consideration your costs of rebuilding the tool to new condition, engineering, service, etc. It is set well below the current market price for similar equipment sold on a full service basis. The differential is approximately 25% below market—enough for men with tooling "know-how" to realize a neat "extra" profit and at the same time acquire modern machine tools.

Plan now to check at once the detailed price and specifications list—now available in every War Assets Administration office (machine tool sales division) and the offices of your approved W.A.A. machine tool dealers.

FOR DETAILED PRICE CATALOG —*WRITE, WIRE OR PHONE:*

1. *Your Regular Machine Tool Dealer*
   War Assets Administration has appointed more than 3,000 "approved" dealers throughout the U. S.
2. *W.A.A. Machine Tool Sales Division*
   In any of the 33 War Assets Administration Regional Offices listed below.



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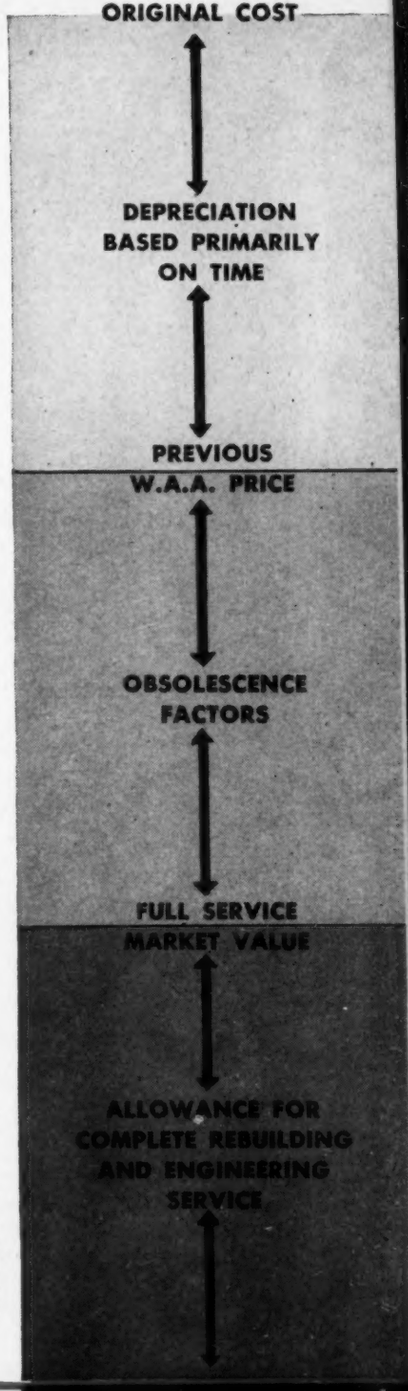
W.A.A.'S NEW PRICING PRINCIPLE


ORIGINAL COST
DEPRECIATION BASED PRIMARILY ON TIME
PREVIOUS W.A.A. PRICE
OBSOLESCENCE FACTORS
FULL SERVICE MARKET VALUE
ALLOWANCE FOR COMPLETE REBUILDING AND ENGINEERING SERVICE
EXTRA PROFIT AREA
For Alert Buyers With Tooling "Know-How." You can completely rebuild the tool, meet engineering and haulage costs and still save money.
NEW PRICE LEVEL

WAR ASSETS ADMINISTRATION

GOVERNMENT OWNED SURPLUS

Offices located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • Fort Worth • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville • Minneapolis • Nashville • New Orleans • New York • Omaha • Philadelphia • Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane • Tulsa

To Honor Your Veterans

This Rich Bronze Plaque

created by master craftsmen in the enduring metal of the arts, fittingly expresses reverence for the memory of those who gave their lives, and honor to all who served in the armed forces. Beautifully etched design with draped flags reproduced in full natural colors.

Shield provides space for gold star names. If not needed for this purpose is finished in red and white. Plaque mounted on solid walnut panel, is 11" x 14¾", accommodates any number of names up to 60. Panels may be rearranged to make plaque suitable for one or only a few names. Price $50.00 plus $1.10 for engraving each complete name. (Larger sizes to accommodate more names quoted on request.) Write us or place your order now.

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SUBSIDIARY OF DODGE MANUFACTURING CORPORATION, MISHAWAKA, INDIANA

G. E. EXECUTIVE ADDRESSES EASTERN NEW YORK MEETING

E. E. Johnson, manager of engineering, Apparatus Department, General Electric Company, was guest speaker at the November 21st meeting of the Purchasing Agents Association of Eastern New York, held at the DeWitt Clinton Hotel, Albany, N. Y. In his talk entitled "What's New in Engineering", he mentioned some of the new research and engineering developments in equipment, transportation, aircraft, jet propulsion, lighting, air-conditioning, X-ray, and nuclear power.

COLONEL GEORGE STUART BRADY GUEST AT WASHINGTON MEETING

Colonel George Stuart Brady, materials expert and Government and manfauctur-ers' materials consultant, was the speaker at the November 12th dinner meeting of the Purchasing Agents Association of Washington, D. C., at the Mayflower Hotel. Colonel Brady spoke on the economics of the current demand and supply situation.

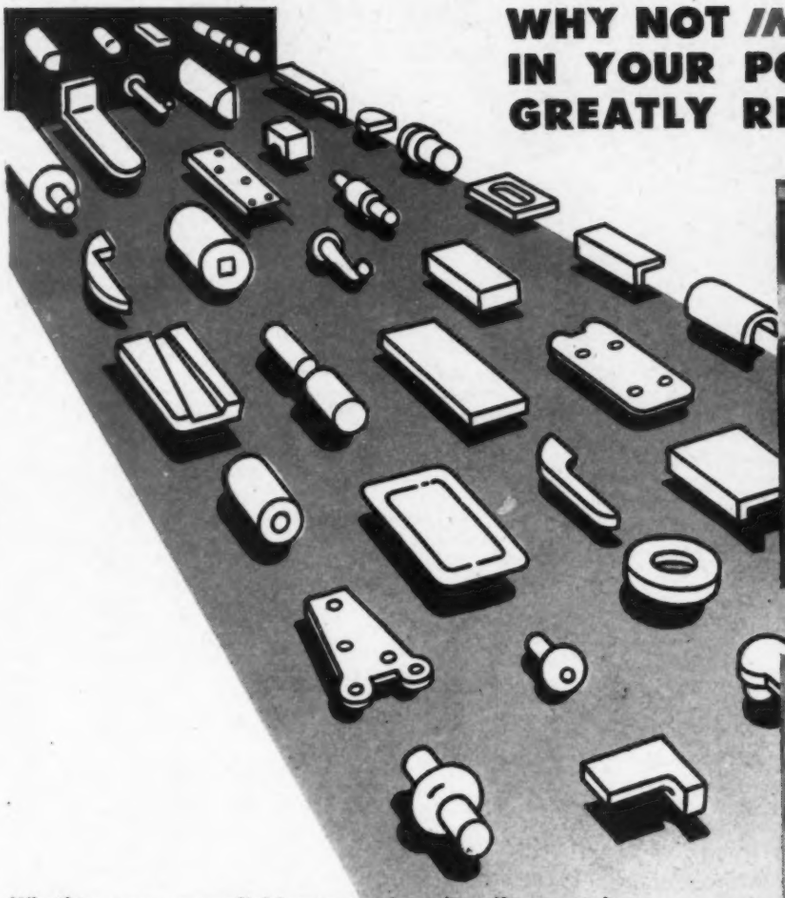
The meeting was a joint one and was attended by the Women's Group of the Association. Ten new members duly welcomed into the association include: Irving G. McNayr, Montgomery County, Maryland; John J. Murphy, Assistant Director of Purchases, Engineering & Research Corporation; Charles H. Tompkins, Jr., Charles H. Tompkins Company; Champ S. Carter, Purchasing Officer, U. S. Treasury Dept., Procurement Division; and Harold E. Steffes, Alford A. Hart, Joseph E. West, Peter A. Lee, Jr., Donald A. Gregory and Richard D. Althaus of the U. S. Maritime Commission.

Announcement was made that Grey Leslie, past association president, has been named the Public Relations Officer for the Eighth District.

NEW YORK ASSOCIATION HEARS ADDRESS BY NEIL CAROTHERS

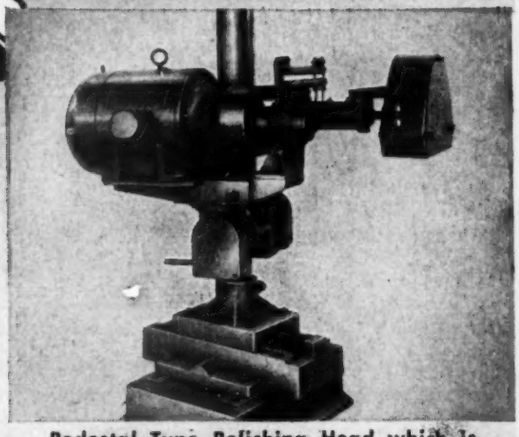
Neil Carothers, Dean of the College of Business Administration, Lehigh University, and former economic expert in the U. S. State Department, was guest speaker at the November 19th dinner-meeting of the Purchasing Agents Association of New York, held at the Builder's Exchange Club, 2 Park Avenue, New York City. Dean Carothers analyzed the current welter of reports, statistics, and forecasts to present an accurate picure of the nation's present industrial status.

Earlier in the afternoon a forum was held on the subject of "fuel", with Merritt Cline presiding. Ned Foulds, Foulds Trading Company, and formerly Chief, Fuel Oil Section PAW, spoke on "Fuel Oil"; and Daniel T. Buckley, Chairman, Bituminous Coal Producers Advisory Board, Dist. No. 3, spoke on "Coal".



WHY NOT *INCREASE* PRODUCTION IN YOUR POLISHING ROOM AND GREATLY REDUCE YOUR COSTS?

Udylite Double Conveyor Square Transfer Machine polishes parts both ways.



Pedestal Type Polishing Head which is adjustable in all directions.

Udylite Rotary Polishing Machine equipped with indexing mechanism.

Whether you are polishing auto door handles, watch cases, toaster bodies, or something else a Udylite Polishing Machine with one operator will give you more production in less floor space than a number of lathes each with its own operator.

Not only that but each piece will be polished evenly over all surfaces and every piece will look like every other piece because they are all presented to the wheels in the same manner.

Thus Udylite Polishing Machines permit you to economize on floor space, machinery, machine maintenance and man power—also to do higher quality work with operators who need not be as highly skilled as lathe hands.

A simple investigation will show you how quickly you could amortize an installation in your plant. Why not ask a Udylite engineer to make such an investigation.

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REPRESENTATIVES IN ALL PRINCIPAL CITIES

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it's easy to pick the right wiper!

Try the blindfold test on KEX Industrial Wiping Towels and ordinary rags or waste. Just by touch, choose the wiper *you* would use.

Feel how rough and scratchy the ordinary rags and waste are. What a lot of damage *they'd* do on delicate surfaces! Now pick up a KEX Wiping Towel. Easy to tell the difference, isn't it? Feel that springy KEX s-o-f-t-n-e-s-s. No scratching, no possibility of wearing grooves in soft metal by foreign matter.

That's not all, though. Every square inch of a KEX Wiping Towel is *wiping* surface . . . hundreds of more wipes per pound over ordinary waste or rags. KEX Industrial Wiping Towels are uniform in size—distribution is easier to control. And fresh KEX Wiping Towels—chemically cleaned by a *special* high-heat process—are delivered to your plant as often as needed. Always plenty of clean KEX Wiping Towels on hand.

Rent KEX Wiping Towels and Figure Your Profits

Try the KEX Wiping Towel Rental System, today. There's nothing to buy, no expensive inventory—just a low monthly rental. And the very first month should show considerable saving on wiping costs. For complete information, phone your local KEX representative—or write KEX National Service, 295 Fifth Ave., New York 16, N.Y.

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"KEX" REG. U. S. PAT. OFF. NATIONAL SERVICE A CALLAWAY MILLS PRODUCT INDUSTRIAL WIPING CLOTHS

SAGINAW VALLEY ASSOCIATION HOLDS LADIES' NIGHT

The October meeting of the Saginaw Valley Purchasing Agents Association, held at the Bay City Yacht Club, Bay City, Michigan, October 8, was dedicated as Ladies Night, with all members present being accompanied by their wives. Sixty-eight members and guests attended the meeting and listened to guest speaker Charles A. Howe, who presented color slides and an informative talk on his latest trip to Mexico.

TULSA ASSOCIATION VISITS SPARTAN FACTORY

On October 22nd members of the Purchasing Agents Association of Tulsa visited the factory of the Spartan Aircraft Company, Tulsa, Oklahoma. Purpose of the visit was to study the manufacturing process of the Spartan Manor All-Aluminum Trailercoach. Arrangements for the visit were made by the association's program committee and W. H. Brixey, Purchasing Agent for Spartan.

NATIONAL OFFICERS VISIT SYRACUSE AND TOLEDO

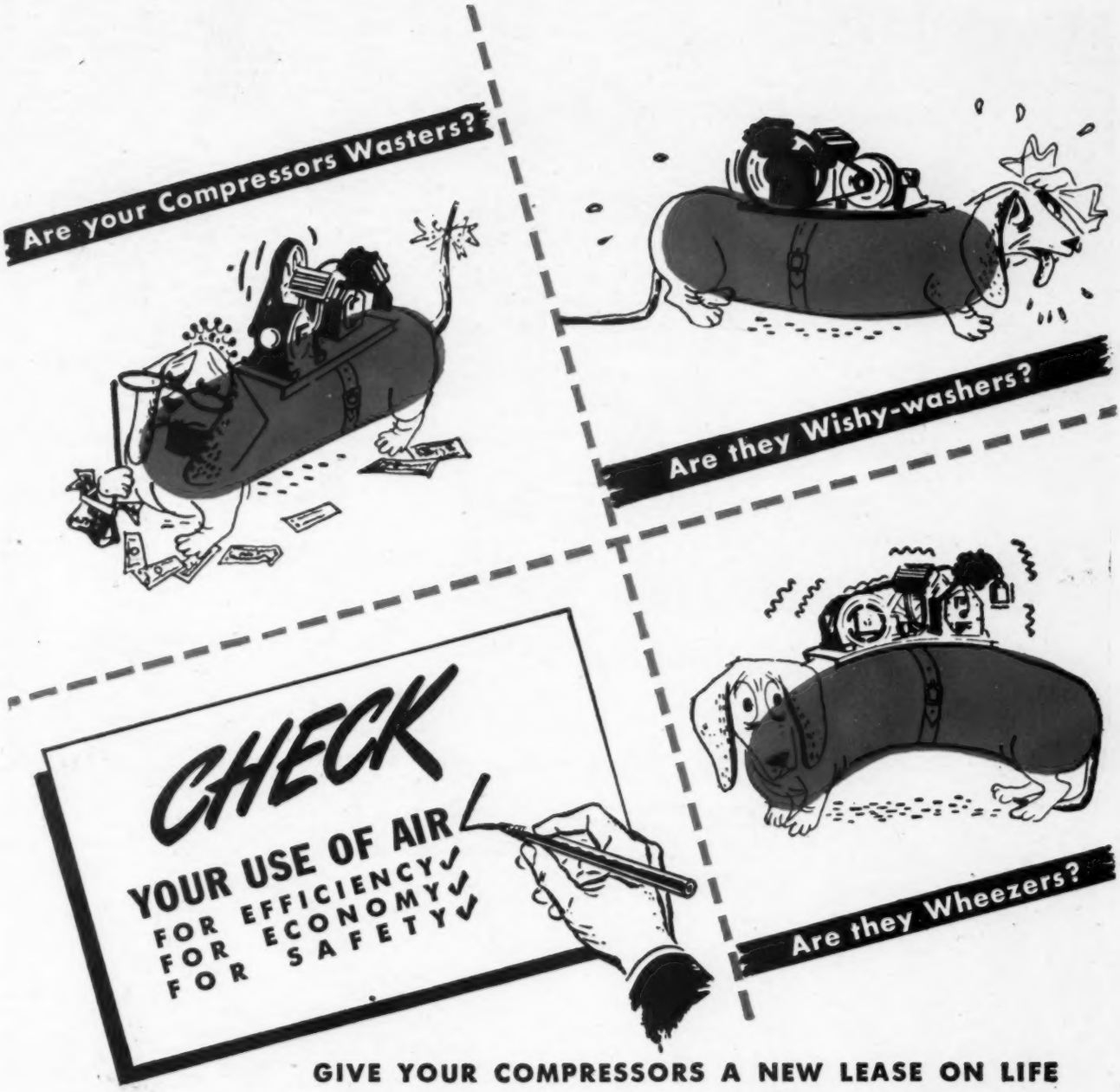
On October 24 George Aljian, NAPA President, addressed the Syracuse and Central New York Purchasing Agents Association at the Onondaga Hotel, Syracuse, N. Y., at a meeting attended by about 150 members and guests in observance of "National Affairs Night". On the 28th Mr. Aljian and Ralph Keefer, Sixth District Vice President, were guests of the Toledo Association at its meeting in the Secor Hotel. Mr. Aljian's subject was "How Big is Our Job?"

COMMODITY FORUM AND DISCUSSION BUFFALO MEETING

A commodity forum and discussion led by Harry D. Grow, chairman of the Commodity Committee, featured the November 13th meeting of the Purchasing Agents Association of Buffalo, at the Statler Hotel, Buffalo. Speakers and their subjects were: Edward A. Ennis, Lake Erie Engineering Corp., "Electrical Equipment"; Stanley W. Ferguson, American Optical Co., "Optical Problems"; E. S. Goodwin, Westinghouse Electric Corp., "Electric Motors"; William C. Maier, Frontier Oil Refining Corp., "Petroleum Products" and Dr. Martin A. Brumbaugh, University of Buffalo, spoke on the "Current Situation in Raw Materials."

The Education Committee, E. W. Noble, Moore Business Forms, Niagara Falls, N. Y., chairman, held its first educational meeting on November 20th, at the Statler. Subject of the meeting was "Escalator Clauses."

(*Turn to page* 266)



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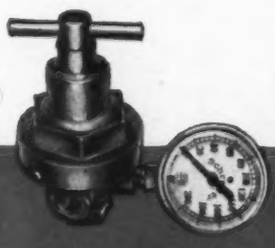
Are you throwing money out the window by overworking your compressors, by demanding too much air where less will do, by decreasing production efficiency through variable, unregulated pressures? No air equipment using cylinders and valves can give the expected results—unless pressure is uniform and constant.

Schrader Air Pressure Regulators will save you money! They'll let you cut the air demands on your compressor from high to low. Air regulated lines mean longer compressor life and reduced maintenance cost, and you'll get better work.

Write for complete information and literature. Dept. A99-7



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TO MANUFACTURERS: American Phillips Screws pay off in many ways, whether you build refrigerators or miniature trains. They speed up handling, increase worker-proficiency by building confidence, cut down losses from dropped screws, "drunken driving," scarred work-surfaces, spoiled material, and lost time from self-inflicted wounds. All because American Phillips Screws make power driving safe, easy, non-fatiguing... *and automatically straight.* Now total up the pay-off... and you'll find TOTAL TIME-SAVINGS RUN AS HIGH AS 50%.

TO CUSTOMERS: American Phillips Screws add the merchandising lure of handsome, modern, workmanlike appearance, inside and out... a look of quality that helps to make the prospect say: "That's for me!" This modern, cost-cutting method of fastening is actually *sales-promotion plus sales-protection.* Are *you* in on this payoff? Write American for recommendation of the type and metal of American Phillips Screws which will do the best job at lowest cost.

4-WINGED DRIVER CAN'T SLIP OUT OF PHILLIPS TAPERED RECESS

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AMERICAN PHILLIPS *Screws*

ALL TYPES
ALL METALS: Steel, Brass, Commercial Bronze, Stainless Steel, Aluminum, Monel, Everdur (silicon bronze)

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"Works with YOU"
On your requirements for Sheet Steel, Flat Wire and Strip Steel, Caine's Specialized Warehouse Service works with you. Special methods and facilities, developed by Caine, work to your advantage in your procurement of Steel. You can have the utmost confidence that gauges, tempers and quantities will meet the most exacting specifications.
Whether your needs call for small warehouse pickups or large production runs, contact your nearest Caine Warehouse or Office. Located throughout the country, Caine Warehouses and Offices stand ready to work with you.
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SOLDERING
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Finds its way in where there is little clearance or cramped space.

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Also Available 3/16 Inch

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Pattern,— Crating Lumber ★ Timbers ★ Plywood

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LUMBER COMPANY

DAYTON, COLUMBUS, SPRINGFIELD HOLD JOINT MEETING

A joint meeting was held Oct. 31 at the Shawnee Hotel, Springfield, Ohio, by the Dayton, Columbus and Springfield Purchasing Agents Associations, at which National President George W. Alijan and Sixth District Vice President Ralph O. Keefer were guest speakers. About 175 members and guests were present. At next meeting of the Sixth District Council, the matter of reviving District Conference meetings will receive consideration. That Sixth District originated the district conference plan many years ago. The meetings were discontinued in 1929.

PURCHASE ORDER PROVISIONS ROCHESTER INDUSTRIAL BUYERS

Harmar Brerton, assistant secretary of the Eastman Kodak Company, gave a talk on provisions and clauses in purchase orders, at the October meeting of the Rochester Association of Industrial Buyers, held at the Normandie Hotel, Rochester, on the 8th. He said that many provisions are unnecessary, pointing out that most states have an extensive uniform sales law which spells out contractual obligations by statute, and covers 80 percent of the clauses listed on many purchase orders.

HAROLD K. HOWE SPEAKS AT CHICAGO MEETING

Harold K. Howe of the La Salle Steel Company was the principal speaker at the November 14th meeting of the Purchasing Agents Association of Chicago at the Hotel Sherman. Mr. Howe's subject was "Current Washington Trends."

MANUFACTURERS-DISTRIBUTORS' NIGHT—SEATTLE

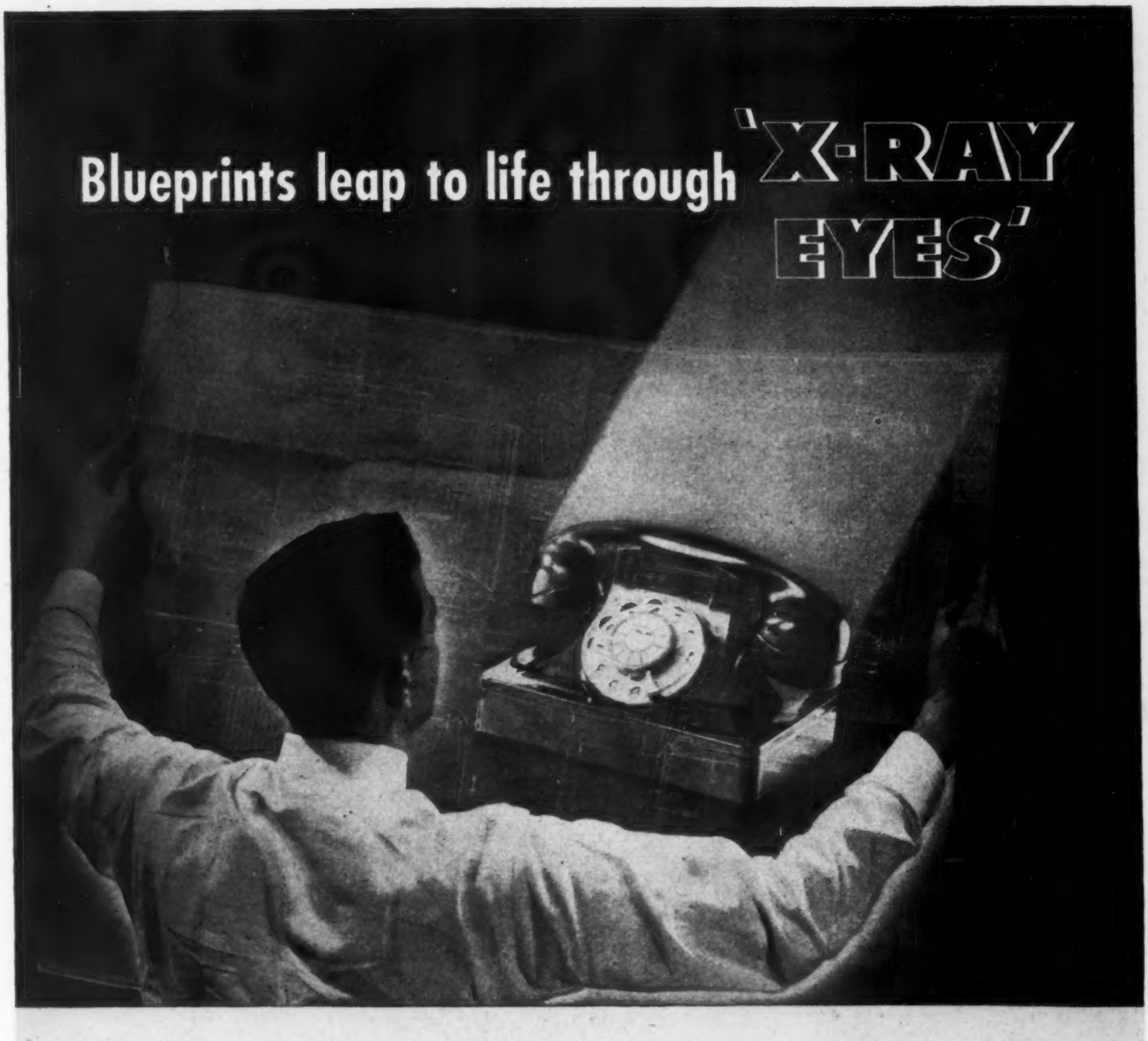
More than 600 purchasing agents, manufacturers, sales managers, engineers, and other business executives attended the 17th Annual Manufacturers and Distributors' Night meeting of the Purchasing Agents Association of Washington, held in the Seattle Chamber of Commerce, Seattle, Wash., November 12th.

George W. Aljian, Director of Purchasing & Packaging, California & Hawaiian Sugar Refining Co., San Francisco, and president of the National Association of Purchasing Agents, was honored guest and chief speaker, his topic being "It's Up to Us."

Honored guests at the speakers' table included: William F. Devin, mayor of Seattle; H. Arends, mayor of Everett; Ferdinand Schmitz, president, Association of Washington Industries; John M. Jewett, Seattle Chamber of Commerce; Frank Knowles, president, Seattle Engineers Club; J. L. Young, president, Industrial Traffic Managers Association; Rolland M. Wolf, president, Transportation Club of Seattle; Tom Widrig, president, The Electric Club of Washington;

(*Continued on page* 268)

Blueprints leap to life through 'X-RAY EYES'



● Our customers profit by the uncanny ability of our engineers to probe beyond the inanimate lines and specifications of blueprints. Their experience and imagination enable them to visualize the finished, molded plastic piece . . . precise in every detail, satin-smooth and consumer-conscious in appearance.

For keen design interpretation and heads-up production of molded plastics, with greater utility, better appearance, quicker deliveries and lowest possible cost, consult General Industries, without obligation of course.

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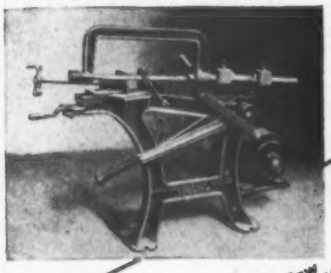


80% of all Small Shop Saws are "Marvels"!

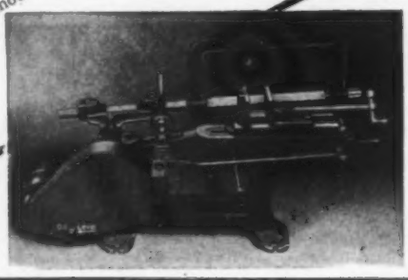
No. 1 Draw Cut Hack Saw Dry cut, 4" x 4" capacity. A sturdy saw well-known for its dependability, economy, and invaluable service in the small shop or shop department. Simple and efficient with low original, maintenance, and blade cost.

MARVEL SAWS

No. 2 Draw Cut Hack Saw. Companion to the No. 1 but with a normal 6" x 6" capacity which can be increased to 8" x 8" by shortening the stroke with adjustable crank. The No. 2 MARVEL also has a swivel vise which is removable from the "T" slotted bed, permitting special fixtures to be mounted. Both machines are available in belt and motor driven models. Motor driven models can also be furnished mounted on portable truck.

Complete Range of Metal Sawing Machines

Being the largest exclusive manufacturer of metal sawing machines and blades, both hack saw and band saw type, we have the correct answer to your cut-off problems. Each MARVEL model has a distinct application, so write us and we will send our catalog, price, and recommendation for the saw to fill your requirements most efficiently. MARVEL sawing engineers are also available to discuss and analyze your cut-off work. (Without obligation of course)



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Whether your problems in machine tools are limited to one or include many machines, Botwinik engineers stand ready to provide a quick, reliable solution. For efficient, low cost production, take advantage of Botwinik's all-purpose service in new, used and rebuilt machine tools.

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Botwinik Brothers of Mass., Inc., 13 Sherman St., Worcester 1, Mass. We would be pleased to receive a copy of your current catalog.

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Tom Wilson, vice president, Seattle Chapter, National Office Managers Association; W. B. Stuht, president, Seattle Sales and Advertising Club; L. F. Duvall, vice president, Seattle Association of Credit Men; Frank Walsh, manager, Tacoma Chamber of Commerce; Archie. Scott, past president, Purchasing Agents Association of British Columbia; and LeNore Wartes, president, Women's Division, Purchasing Agents Association of Washington.

Featured on the entertainment program was the Puget Power Company's "Northwest Theatre of the Air", which was broadcast from the stage.

President Wm. J. Romer of the Purchasing Agents Association of Connecticut and President George W. Aljian of the National Association at joint meeting of the Connecticut and Western Massachusetts Associations at Hartford on October 15th.

MERITS OF EDUCATION IN PURCHASING — BIRMINGHAM

I. J. Browder, Dean of Birmingham Center, University of Alabama, spoke on "The Merits of Education in the Field of Purchasing", at the November 8th meeting of the Purchasing Agents Association at the Thomas Jefferson Hotel, Birmingham. Mr. Browder outlined what the state university has planned for the the purchasing agent, the embryonic purchasing agent, and students interested in purchasing.

BUFFALO PURCHASING AGENTS VISIT BETHLEHEM STEEL CO. . .

Members of the Buffalo Association of Purchasing Agents and executives of their respective companies, visited the huge plant of the Bethlehem Steel Company at Bethlehem, Pa., on November 20th.

MADE HONORARY MEMBERS OF P.A.A. OF NOR. CALIF.

Louis A. Colton, who retired as Purchasing Agent of Zellerbach Paper Co., San Francisco, Calif., after 48 years of service, and Frank B. Hartung, who retired as Purchasing Agent of the Owens-Illinois Glass Company after 43 years of service, both of whom have been members of the Purchasing Agents Association of Northern California for a great many years, have been made honorary members of that association.

Do You, Too, Want to Cut Grinding Costs?

32 ALUNDUM*. . . the Sensational New Norton Abrasive is doing it for many others

"50% faster cutting, 100% longer wheel life" — **Surfacing broaches**

"Ground 30 high speed steel crank lathe tools compared to 23 tools for competitive wheel" — **Sharpening tools**

"Ground 3600 pieces per wheel compared with 1200 to 1500 previously" — **Surfacing cast iron with segments**

"75% increase in life. Required no dressing" — **Sharpening file chisels**

"Gave over 40 holes per wheel compared to 10 for best previous wheel" — **Internal grinding of pump part**

"Wheel life of five weeks as compared with four weeks previously; 50 pieces per dressing compared with 20" — **Cylindrical grinding of shafts**

"Gave over 1000 pieces per dressing compared to 300 previously" — **Surfacing razor parts**

And here's why 32 ALUNDUM abrasive is cutting costs —

1. The unique electric furnace process which eliminates crushing produces grains with many sharp points for faster, cooler cutting.

2. Because the grains are over 99% pure fused alumina the many sharp points have exceptional resistance to dulling.

3. The rough, nubbly surface of the grains insures strong, uniform bonding for longer wheel life and fewer dressings.

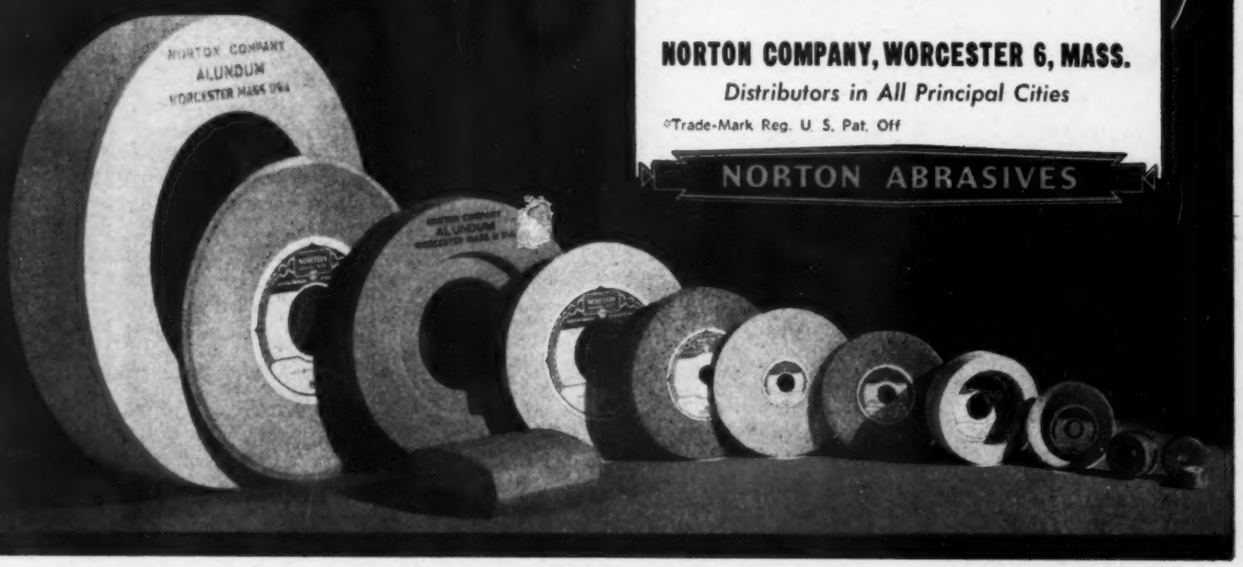
Put 32 ALUNDUM grinding wheels to work cutting costs for you.

NORTON COMPANY, WORCESTER 6, MASS.

Distributors in All Principal Cities

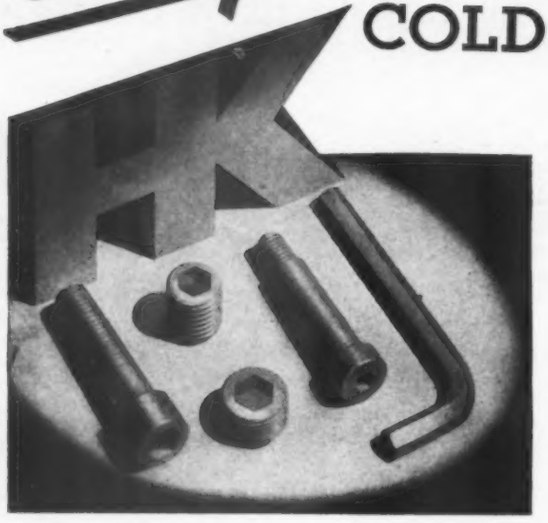
*Trade-Mark Reg. U. S. Pat. Off

NORTON ABRASIVES



Completely

COLD FORGED



exclusively
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SET - CAP - PIPE PLUG
STRIPPER BOLT - KEY

Savers of WEIGHT-SPACE-TIME

WEIGHT: Because of greater strength fewer screws are needed.

SPACE: Internal wrenching feature permits more compact design.

TIME: Quicker and more positive tightening especially in close corners and hard-to-get-at places.

PLUS— the fact all Holo - Krome FIBRO FORGED Socket Screws are made of special analysis alloy steel scientifically heat treated to develop the utmost in strength . . . Every H-K Socket Screw Product is guaranteed to give unfailing Performance.

HOLO-KROME

Your Holo-Krome Industrial Distributor is ready to serve you from his warehouse stock.

fibro forged

INTERNAL WRENCHING
SOCKET SCREWS

THE HOLO-KROME SCREW CORP. HARTFORD 10, CONN.

Business Policy

(*Continued from page* 107)

some years. Such a policy is also related to expectations with respect to future demand. Alternatively, in some instances efforts to recapture markets, or to secure them for the first time, may suggest policies bordering on temporary losses. In all price decisions competitors' possible reactions must, of course, be critically weighed.

Price policy decisions may also impinge on finance and require a reconsideration of financial policy. The desirability of short term or long term borrowing, or the issuance of additional stock, cannot be determined without reference to the anticipated direction of interest rates and general credit conditions. Interrelated with both the marketing and financial factors of price policy is the firm's credit policy, involving, among other things, discount practices.

All matters of business policy are necessarily related to general fluctuations in economic activity. These fluctuations may follow a definitely cyclical pattern, or take the form of primary and secondary post-war slumps with intervening high levels of economic activity, or they may reveal no discernable pattern at all. In any event, they are of the most fundamental importance to business policy makers. While accurate prediction is ordinarily impossible, careful thinking can at least help to avoid too great an impact on a given firm.

* * *

Stock Control in the A.A.F.

(*Continued from page* 101)

partial termination would represent the correct stock control action. Allowing for a three month tolerance of the twelve month procurement lead time, the net termination quantity would be current procurement (7800) minus the twelve month production requirement (3900) minus a three month tolerance (5500 ÷ 12 x 3 or 1380, say 1400) or a total of 2500. Such calculated termination quantity would then be initiated on a form as outlined in Figure 9.

Management Summaries

Periodically the stock control management within the Army Air Forces must be furnished summary information by classification of items which will indicate to them the

(*Continued on page* 274)

DRYSEAL PIPE THREADS

An improvement in tube fittings every user should know about . . . Now being incorporated in

IMPERIAL TUBE FITTINGS

The Society of Automotive Engineers has issued specifications for an improved type of pipe thread This new pipe thread gives pressure-tight joints without the use of pipe dope. It is known as the Dryseal American (National) Standard Taper Pipe Thread and varies from the American Standard in that:

1. There is a difference in the truncation of roots and crests of threads. (See "A" at right.)
2. Effective length of thread has been made consistent for all sizes, with sizes over ⅛" lengthened appreciably. (See illustration below.)
3. Closer control of gaging is required to assure proper diameter, form, taper, etc.

Note longer pipe thread on new fitting with Dryseal.

NO NEED TO USE DOPE ON THREADS

In the Dryseal Pipe Thread the truncation of the root is greater than the truncation of the crest, and contact between root and crest is assured in assembly before flanks of threads engage. (See "B" at right.) The elimination of clearance at crest and root prevents spiral leakage and renders joints pressure tight without pipe dope. However, it is always good practice in assembling metal-to-metal threads to use some form of lubricant to prevent galling.

RECOMMENDED ASSEMBLIES

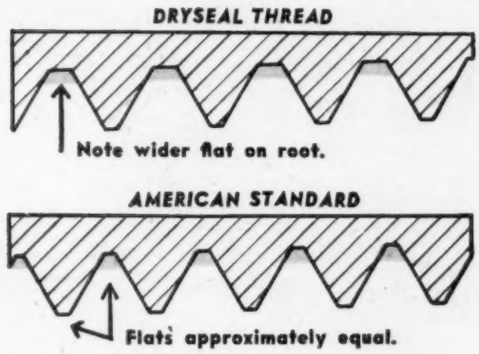
Pipe thread assemblies in which both parts have full length Dryseal American Standard Taper Pipe Threads are considered best for strength and seal. However, there are additional S.A.E. specifications covering short Dryseal taper pipe threads and Dryseal straight pipe threads which offer certain economies or advantages in materials, clearances or assembly. For trouble-free assembly without sealer, the full length thread is recommended.

FULL LENGTH DRYSEAL ON IMPERIAL FITTINGS

Full length Dryseal Taper Pipe Threads are being incorporated on pipe thread connections on all Imperial Flared, Compression, Hi-Duty and Flex Tube Fittings. Many types and sizes of Imperial Fittings are already coming through with these threads; others are being changed.

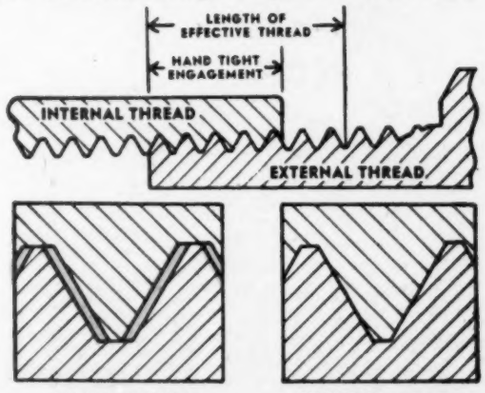
THE IMPERIAL BRASS MANUFACTURING COMPANY
512 South Racine Avenue, Chicago 7, Illinois

A. How Dryseal Differs From the American Standard



Note that in Dryseal thread above, there is greater truncation of root than of crest, producing a flat on root wider than flat on crest. Accordingly, contact between root and crest is assured before flanks of threads engage. No spiral clearance is permitted, such as normally occurs in American Standard, in which truncation of roots and crests is approximately equal. Also, Dryseal thread is somewhat longer than American Standard on sizes over ⅛" and gaging of threads is more closely controlled.

B. Assembling Dryseal Thread



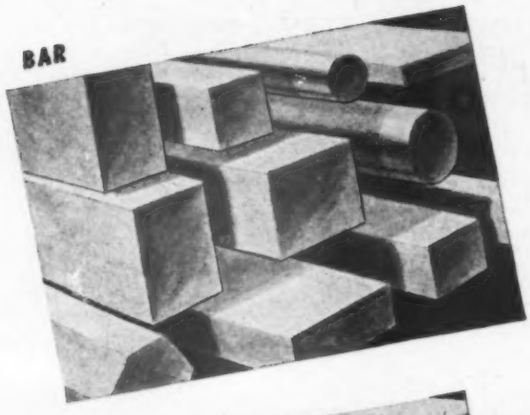
HAND TIGHT
Note that crests and roots of threads have already engaged while flanks of thread are still apart.

WRENCH TIGHT
Note that flanks or sides of thread have now engaged making a tight metal-to-metal seal.

Flats and clearances in drawings are exaggerated to emphasize distinctive features of Dryseal threads.

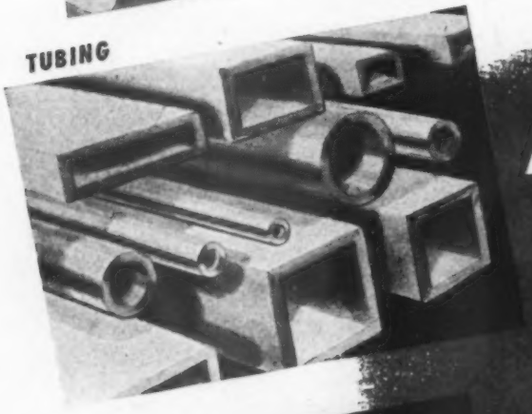
IMPERIAL PIONEERS IN TUBE FITTINGS AND TUBE WORKING TOOLS

BAR



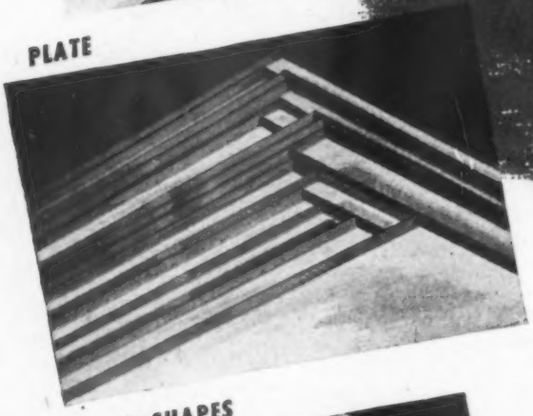
ALUMINUM MILL PRODUCTS

TUBING

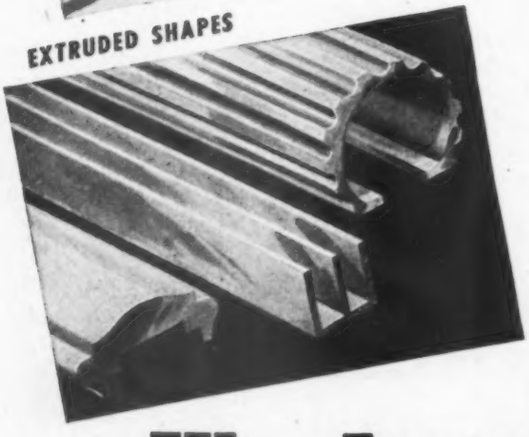


AVAILABLE TO FABRICATORS right now!

PLATE



EXTRUDED SHAPES



Consider your aluminum needs—then get in touch with your nearest War Assets Administration Regional Office to see if we can fill your requirements. Even your highly specialized requirements might be filled from WAA surplus stocks. It costs nothing to find out. Orders are filled quickly and without fuss.

All metals are sold under existing priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area, and then to purchase the materials offered herein.

Exporters are considered as wholesalers in the purchase of surplus property. Any question on export control should be referred to Office of International Trade, Department of Commerce, Washington, D. C.

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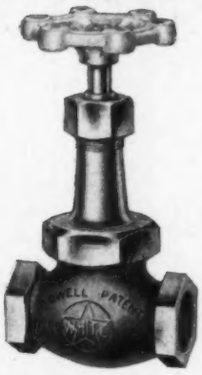
157-9

POWELL has the *right* Valves for *all* your Flow Control requirements!

Large 125-pound Iron Body Bronze Mounted O. S. & Y. Gate Valve.



200-pound Bronze Globe Valve with regrindable, renewable wear-resisting seat and disc.

This may sound like a broad statement—but we can back it up. Because, through 100 years of making valves—and valves only—Powell has always been ready with valves that are *right*—in both design and material—to meet *all* demands imposed by the amazing growth of American Industry.

Today the Powell Line includes Bronze and Iron Valves of every necessary type, size, design and working pressure; Cast Steel Valves of every type in pressure classes from 150 to 2500 pounds; and a complete line of Corrosion-Resistant Valves, including many special designs and made in the widest range of pure metals and special alloys ever used in making valves.

200-pound Bronze Gate Valve with union bonnet and renewable "Powellium" disc.

The Wm. Powell Co., Cincinnati 22, Ohio

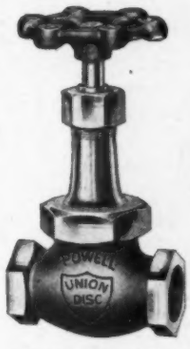
DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

Large 250-pound Iron Body Bronze Mounted Regrinding Horizontal Swing Check Valve.

150-pound Bronze Gate Valve with screwed-in bonnet and inside screw, non-rising stem.

Catalogs on request. Kindly state whether you are chiefly interested in Bronze, Iron, Cast Steel, or Corrosion-Resistant Valves.

200-pound Bronze Regrinding Horizontal Swing Check Valve.

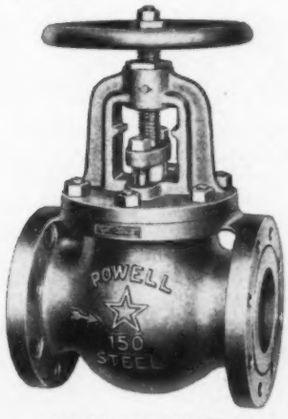


150-pound Bronze Globe Valve with renewable, composition disc.

Class 300-pound Cast Steel Swing Check Valve.

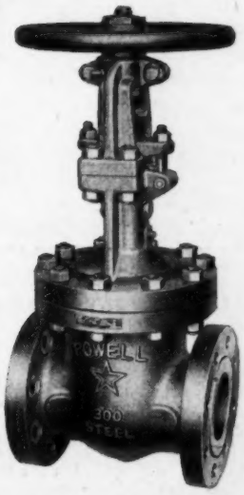
Large 125-pound Iron Body Bronze Mounted O. S. & Y. Globe Valve.

125-pound Iron Body Bronze Mounted "Master Pilot" Gate Valve.



Class 150-pound Cast Steel O. S. & Y. Globe Valve.

125-pound Bronze Gate Valve with screwed-in bonnet.



Class 300-pound Cast Steel O. S. & Y. Gate Valve.

POWELL VALVES

Don't send an ordinary file to do

A PRECISION JOB!

specify . . .

American Swiss Files

Whenever you have a particularly difficult filing job, just look in the "AMERICAN SWISS" catalog — you'll find an exactly suitable file among the 3000 listed shapes, sizes and cuts.

When the work is *fine*, remember that some "AMERICAN SWISS" files are made to tolerances as close as .002 in. — and some shapes are obtainable in dimensions as small as ⅛ in. and less.

When the work is *heavy*, remember that "AMERICAN SWISS" files are made of the highest grade file steel —no ordinary tool steel is used—and specially heat-treated to assure extreme toughness and uniform hardness. When you specify "AMERICAN SWISS" you are selecting a precision tool which has been so rigidly inspected that its quality is guaranteed. For 45 years the "AMERICAN SWISS" standard has been: "Only the best are "good enough."

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AMERICAN SWISS FILE & TOOL CO.
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ONLY THE BEST

ASK FOR THEM BY THIS NAME

American Swiss

SWISS PATTERN FILES

Stock Control In the A.A.F.

(*Continued from page* 270)

total stock position in terms of units and dollars. A sample summary of this type, prepared once each three months, is indicated in Figure 10. This summary is entirely separate from the periodic fiscal report outlining the degree of conformance of the stock control program with the planned budget for such items.

The stock movement data in this summary presents a breakdown of the total number of items for which there have been no issues during the past six months period and indicates possible items which should be removed from stock in entirety. The excess action data presents the number of the total items requiring some disposal action. The balance of the data indicates to management the effectiveness of the stock control system in the maintenance of a balanced stock and procurement position. Over investment in inventories creates a loss to taxpayers in the same manner as an excess inventory produces a loss for a retailer or manufacturer. By a constant appraisal of such summaries, the final procurement policies and action will be such as to accurately augment the existing inventory status and the planned issue program.

Changing military plans created both within the service and by the Congress cause major upheavals in the stock control program and account for the oftentimes violent changes in the procurement program. Without a flexible system of operation and control, it would be impossible to reflect these high volume changes into a correct procurement schedule. The stock control system is indeed the key to the materiel purchasing program of the Army Air Forces.

The Container Situation

(*Continued from page* 110)

of glassine are laminated.

Paper bags of transparent films such as cellophane have opened up markets for products formerly sold in bulk. Recently transparent films have been coated with lacquers and sheet sealing and moisture-proof chraracteristics.

Foil bags, used extensively in packaging war materials, are now available for use with civilian products. Foil is usually laminated to some other type of paper such as kraft or glassine. Foremost among the qualities of foil is its abilities to exclude light. Foil laminated paper will also protect highly hygroscopic products.

(*Continued on page* 276)

ARMSTRONG-BRAY

GEAR and WHEEL PULLERS

Essential tools for the maintenance and repair of machinery, motors, engines and shafting. They remove gears, pulleys, sheaves, bearings, sleeves, etc., easily and quickly, without battering or breakage. STEELGRIP Rigid Arm Pullers in standard and special types CHAINGRIP Pullers, that reach-in considerable distance from the end of shaft; automotive pullers, etc. — 41 types and sizes.

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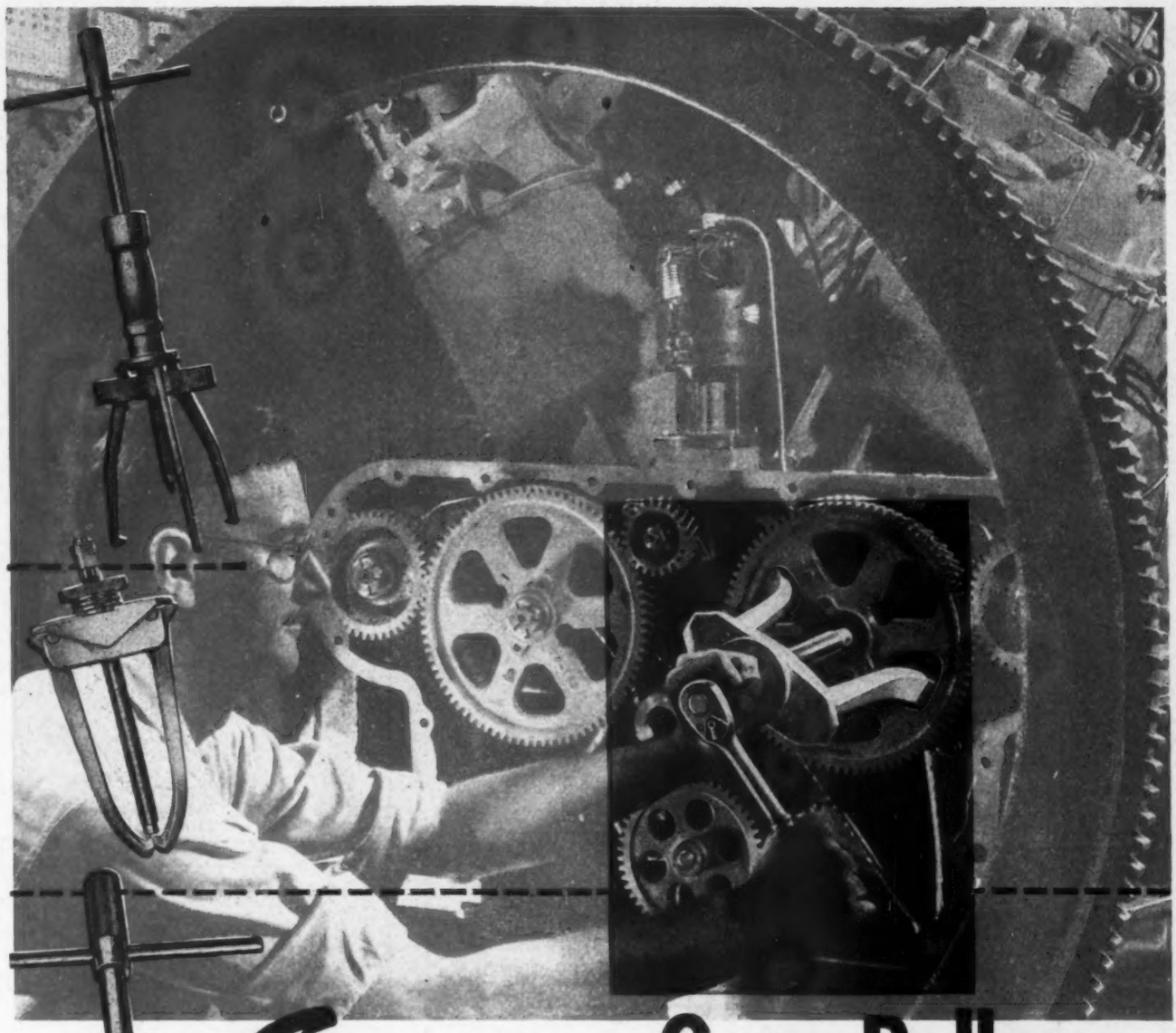


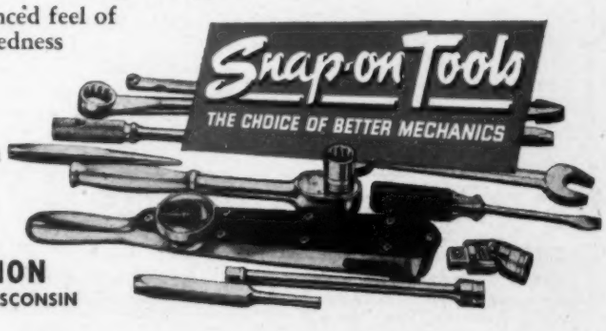
Snap-on Gear Pullers

give you safe, uniform power over entire range

On the testing floor . . . in maintenance operations . . . wherever there is a need for gear pullers, Snap-ons are favored by men who know good tools. There are four definite reasons for this popularity: (1) Snap-ons have more "locking power" for added safety. (2) They give you a "tip-less" pull that prevents binding. (3) You enjoy smooth uniform power for easy pulling over the entire range. (4) Snap-on pullers are available in a wide range of types and sizes.

You'll like the comfortable, well-balanced feel of Snap-on pullers. They have the ruggedness and stamina that makes easy jobs out of the tough ones.

Ask the Snap-on man who calls at your plant for full details on Snap-on gear pullers or write for catalog of 3,000 Snap-on tools for industrial production and maintenance.



SNAP-ON TOOLS CORPORATION
8048-L 28th AVENUE KENOSHA, WISCONSIN

There's an *Eastern Mixer* for Every Job

Our Engineering Department has a wide experience in recommending mixers for practically every mixing requirement. There is no substitute for this practical experience in supplying the most efficient equipment for each particular processing application.

The mixer shown here meets practically every requirement for stirring thin and medium viscosity liquids. It is Model H-1, ¼ H.P., operates at 1725 R. P. M. and is available with motors of all enclosures. Light in weight, it is readily portable and can be easily shifted from one tank to another. This is important where frequent cleaning or changing of the shaft is necessary. This series is widely used because of its broad application and comparatively low cost. Other standard models are available operating at 1125 R. P. M. and 400 R. P. M. Other geared models are obtainable operating at speeds from 190 R. P. M. to 800 R. P. M. Quick delivery may now be had on many models of Eastern Mixers.

MODEL H-1

Eastern has developed a mechanical rotary seal to replace the conventional stuffing box in side-entering mixers. It is applicable for non-corrosive liquids, including hydrocarbons, aqueous solutions, etc. It is particularly desirable for use with oil-sensitive substances. Maintenance trouble will be a thing of the past. Experience has shown seal will stand thousands of hours of service without maintenance or replacement of parts.

Write now for catalog on Eastern Mixing Equipment.

EASTERN INDUSTRIES, INC.
SUCCESSORS TO
EASTERN ENGINEERING COMPANY
61 FOX STREET, NEW HAVEN 6, CONNECTICUT

Look to TRUMBULL
AS YOUR DEPENDABLE SOURCE OF SUPPLY

"LET'S TAKE THE SIMPLE, INEXPENSIVE TYPE D SWITCH • • AND MAKE IT BETTER THAN IT HAS EVER BEEN MADE BEFORE"

In just those words more than a year ago, a Trumbull team of design and production engineers set to work to give the Electrical Industry's basic low-cost enclosed switch "the works". How well they have succeeded is for YOU to decide. But we know in advance what your verdict must be. For, not only is this an outstanding example of American postwar ingenuity in making a poduct far superior in quality and performance at low cost . . . it is also the handsomest, simplest, most easily wired, sturdiest and best engineered Type D Switch you have seen . . . or we either.

Now coming off our new streamlined production lines mighty fast. Place your orders, Gentlemen!

- *Front operated.*
- Locking provision in "off" position.
- Straight through wiring.
- Back mounted.
- More wiring space.
- Switch unit removable.
- Very compact.

THE TRUMBULL ELECTRIC MFG. CO. • PLAINVILLE, CONN.
OTHER FACTORIES AT NORWOOD, O. — SEATTLE, SAN FRANCISCO, LOS ANGELES

The Container Situation

(*Continued from page* 274)

the qualities of foil is its abilities to exclude light. Foil laminated paper will also protect highly hygroscopic products.

Mr. Hinkle said that the heat-sealing closure will form a tight seal with a material such as lacquer or hot melt coating that will effectively prevent loss or gain of moisture. "Tests have proved that bags closed by heat-sealing will be at least 50% better in protection than will be a bag closed by ordinary adhesives or any of the other types of closures," he said.

Heat-sealing also prevents the sifting out of fine mixes such as flour, pudding powders, and other fine and granular products.

The automobile industry is using bags with heat-sealing closures for packaging parts, to protect them against tampering, corrosion, etc. In the frozen food industry, such bags are used to prevent leakage, the bags also being used as liners for cardboard packaging.

Mentioning the comparatively recent development of heat-sealing equipment, he said that the prepared flour mix industry is equipping its plants with machines that will insert a paper bag in a carton, automatically fill the bag and heat-seal it, then close the carton with automatic equipment. A complete packaging line using these units will open, fill, weigh and close bags and cartons at a rate of from 60 to 80 per minute.

In conclusion, he said that the bag industry has substantially increased its facilities. However, increases in supply of bags are dependent on raw materials, the supply of which is inadequate at present. The OPA has a ceiling price on pulp, under which it is impossible to get needed supplies from Canada and Sweden. Production problems will be solved when these controls are lifted and materials again become available.

* * *

Southeastern P.A. Conference at Birmingham

(*Continued from page* 120)

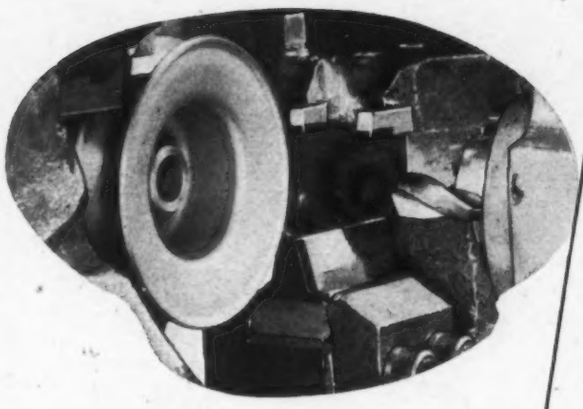
suppliers, ruling out such practices and at the same time resulting in simpler, fairer, and more understandable contracts. Mr. Jolly's complete address is published in this issue.

R. N. Patrick, Purchasing Agent of the Plantation Pipe Line Company, Atlanta, and first president of

(*Continued on page* 280)

JOB LOT WORK or MASS PRODUCTION

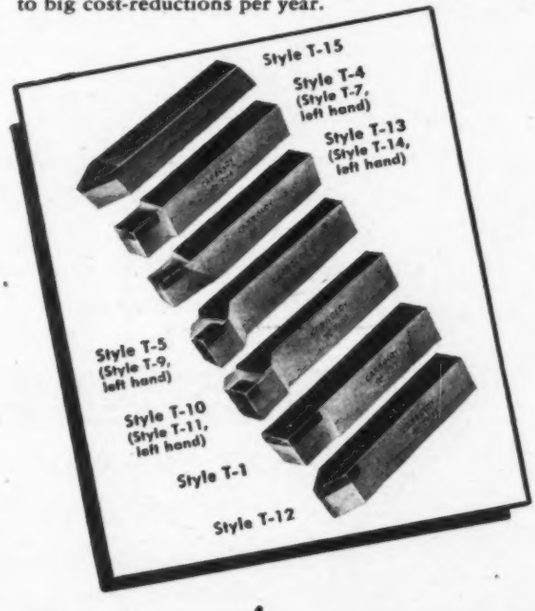
CARBOLOY CEMENTED CARBIDES "Standards" Speed Output—Cut Costs!



Machines Run 4 Times Longer Per-Tool-Grind! In job-lot machining of cast iron pulleys, "Standards"—adapted to 8 roughing and finishing operations—held down initial tool costs, stepped up production, kept machines running 4 times longer per tool grind.

4 Stations on Turret Eliminated—19 Tools Saved! By tooling up with Carboloy Cemented Carbide "Standards", 4 turret stations were eliminated, 19 tools saved. Savings like this, month after month, add up to big cost-reductions per year.

80% of Hand-Polishing Eliminated! High surface finish obtained in mass-production machining of this steel gear made possible cutting hand-polishing time 80%.


Style T-15
Style T-4 (Style T-7, left hand)
Style T-13 (Style T-14, left hand)
Style T-5 (Style T-9, left hand)
Style T-10 (Style T-11, left hand)
Style T-1
Style T-12

CHANGE TO CARBOLOY "STANDARDS" FOR RESULTS LIKE THESE IN YOUR PLANT

A change to Carboloy Cemented Carbide "Standards" is a change to increased production, better finish, lower cost. Available in 11 Standard Styles—adaptable to 60%-80% of the turning, facing and boring jobs, they are actually priced lower than ordinary tools in many sizes.

For a useful guide to most efficient use of "Standards", grades, prices, specifications, etc., write today for Catalog GT-175R.

The word "Carboloy" is a registered trademark of Carboloy Company, Inc., sole makers of Carboloy Cemented Carbides.

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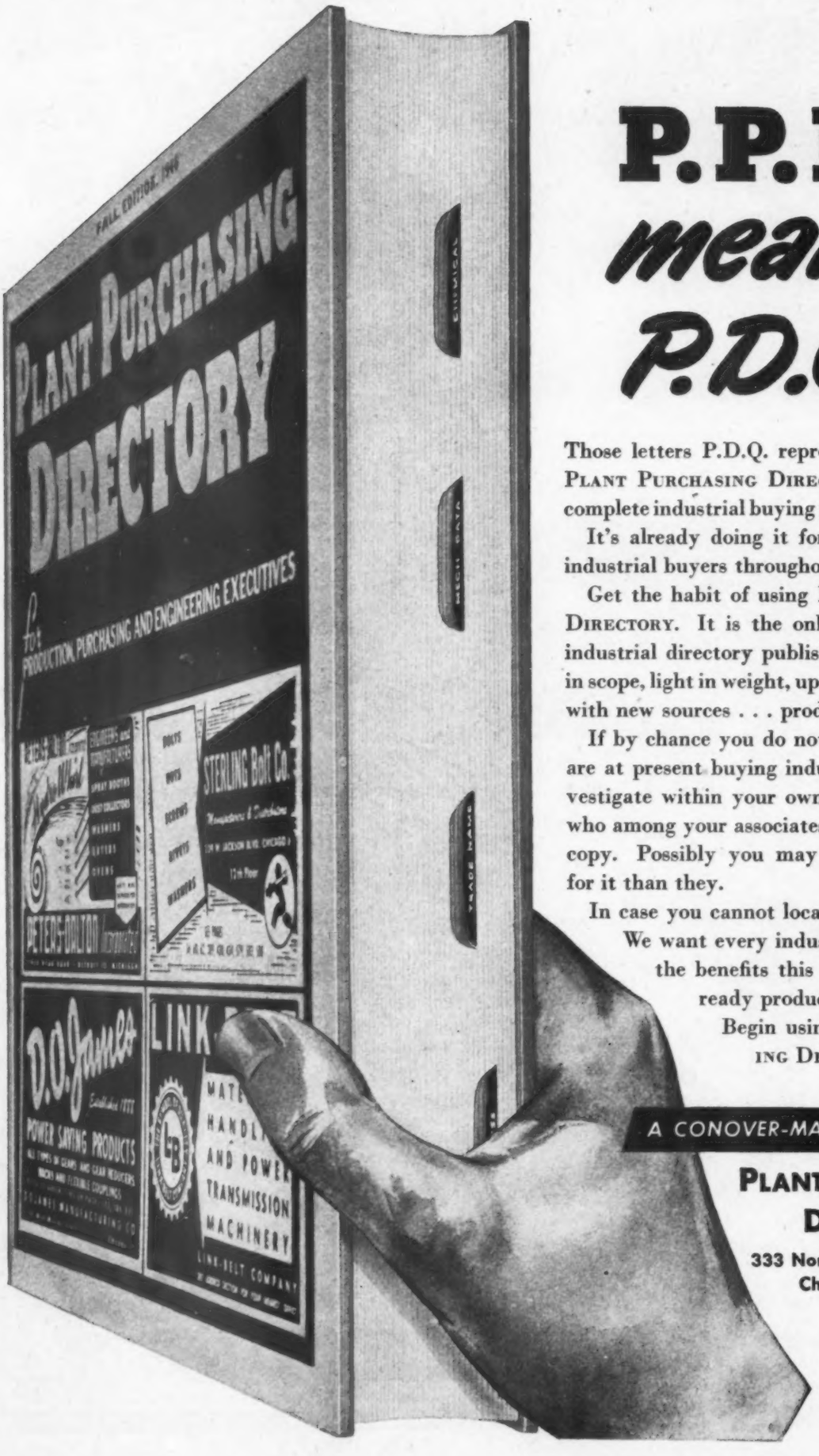
(TRADEMARK) CEMENTED CARBIDE

STOCKED BY AUTHORIZED CARBOLOY CEMENTED CARBIDE DISTRIBUTORS IN 69 CITIES Coast To Coast

CHICAGO • CLEVELAND • DETROIT • HOUSTON • LOS ANGELES • MILWAUKEE • NEWARK • PHILADELPHIA • PITTSBURGH • THOMASTON



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If by chance you do not have a copy—and are at present buying industrial products, investigate within your own organization as to who among your associates may have a recent copy. Possibly you may have greater need for it than they.

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A CONOVER-MAST PUBLICATION

PLANT PURCHASING DIRECTORY

333 North Michigan Avenue
Chicago 1, Illinois

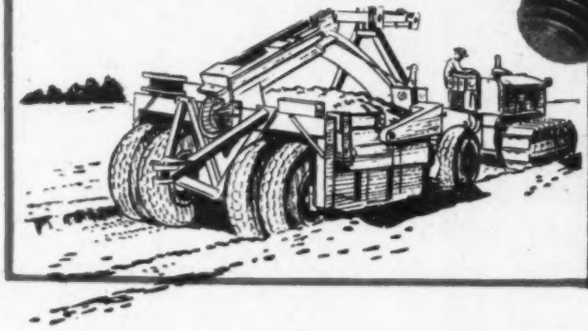
Stamina Toughness Long Life

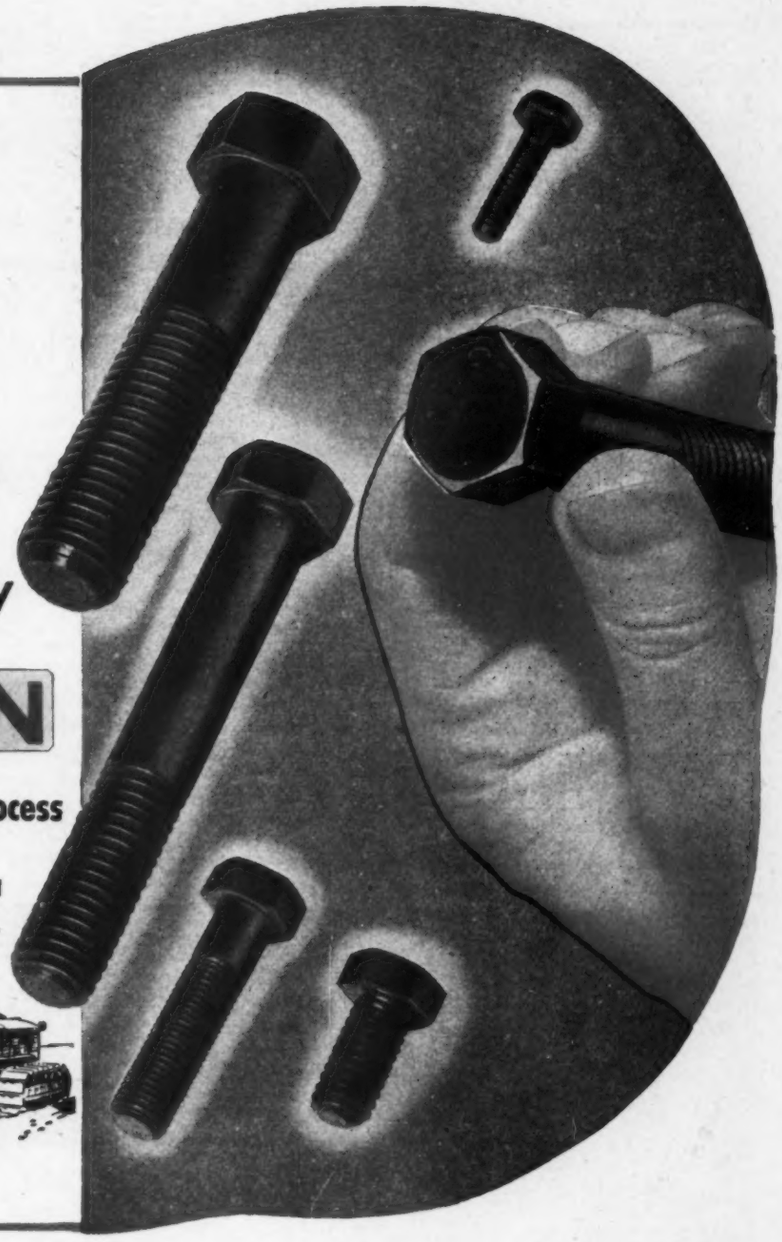
built into Cleveland *Top Quality* Cap Screws by

EXTRUSION

as applied in the Kaufman process

Fasteners you can depend on to stand the strains of heavy construction work.





Producers of heavy construction machinery, metal working machines, automotive equipment and farm machinery recognize their responsibility in using dependable high quality fasteners. You profit by following their example—use Cleveland High Carbon Heat Treated Screws for their unusual strength and uniform accuracy. Specify Cleveland *Top Quality* Fasteners.

CLEVELAND *Top Quality* **FASTENERS**

The Cleveland Cap Screw Company

2917 EAST 79TH STREET • CLEVELAND 4, OHIO

Warehouses: Chicago and Philadelphia

Ask your Jobber for Cleveland Fasteners

MADE BY THE ORIGINATORS OF THE KAUFMAN PROCESS FOR GREATER STRENGTH AND ACCURACY

MORE THAN 70 OAKITE MATERIALS

. . . to help solve *all* your cleaning problems

A Man Well Worth Knowing!

That's your local Oakite Technical Service Representative. Ready (at your call) to roll up his sleeves and pitch in on your cleaning problems — big or little!

Here's how the Oakite man works: First he considers the surface to be cleaned; the contaminant to be removed; water conditions and the like. Based on this thorough understanding of your particular problem, your Oakite Representative then makes recommendations (double-checked when necessary in the Oakite lab) that will surely give you that precise degree of cleanliness in less time with less effort at less cost.

So, if you've a cleaning problem, consult your nearby Oakite Technical Service Representative. His readily available advice costs you nothing . . . it may well pay you handsome dividends.

OAKITE PRODUCTS, INC., 54 Thames St., NEW YORK 6, N. Y.

Technical Service Representatives Located in All Principal Cities of the United States and Canada

OAKITE *Specialized* CLEANING

MATERIALS · METHODS · SERVICE · FOR EVERY CLEANING REQUIREMENT

Special Alloy Coating
XLO MUSIC WIRE —the wire of a thousand uses now available with special alloy coating—resistant to corrosion and rust. This smooth coating acts as a lubricant, reduces tool wear, withstands 700° Fahrenheit. Highest tensile without disruption to physicals. Sizes .003" to .080".
JOHNSON
STEEL AND WIRE COMPANY, INC.
WORCESTER 1, MASS.
NEW YORK AKRON DETROIT CHICAGO LOS ANGELES TORONTO

Southeastern P. A. Conference at Birmingham

(*Continued from page 276*)

the Georgia Association, led the discussion on Mr. Jolly's paper.

Stuart F. Heinritz, Editor of PURCHASING Magazine, New York, spoke on "The Future of Purchasing". He made the point that a realistic consideration of this topic must be concerned not only with the potentialities of the purchasing function, but with the extent to which such potentialities can actually be realized, and this depends largely on what those outside of purchasing think of it. He cited some of the opportunities and shortcomings in purchasing performance and association activities that contribute to this evaluation. The complete paper was published in the November issue.

Dana Price, Purchasing Agent of the Freeport Sulphur Company, New Orleans, led the discussion that followed this presentation.

A. Grant Clark, Purchasing Agent of the McWilliams Dredging Company, New Orleans, and District Vice President, N.A.P.A., next addressed the conference on "The Affairs of District No. 7". Mr. Clark reported notable gains in membership, interest and activity throughout the District, reflecting a very healthy condition.

Harlan E. Cross, Purchasing Agent of the Sloss-Sheffield Steel & Iron Company, Birmingham, a past District Vice President, and currently serving as chairman of the District Activities Committee, reported on the work and plans of that committee. An abstract of his remarks appears elsewhere in this issue.

T. A. Corcoran, of Louisville, for the Resolutions Committee, expressed the appreciation of Southeastern Purchasing Agents for all who had contributed to the success of the meeting. President Aljian took the floor briefly to congratulate Chairman Cole and his committees on the outstanding quality and constructive nature of the conference. He declared his intention of telling purchasing men about it in all sections of the country as he visits them, and predicted that this conference would become the pattern for similar meetings in other districts.

Other announcements concerned the arrangements for golf and plant visitations on Friday afternoon. Invitations were received from the Louisville and New Orleans Associations to hold the 1947 conference in their cities. The conference thereupon adjourned.

Everything for your Piping Job from One Complete line

The type of installation—or size of the job—makes no difference. Whatever your piping needs—selecting from the *complete* Crane line assures the maximum benefits of standardization.

For this ammonia compressor installation, for instance, one order to your Crane Branch or Wholesaler covers all the piping materials. Specifying, buying, and erecting—every step of the job is simplified because you deal with a single, responsible source. And watch how it speeds piping maintenance work.

With top quality assured by Crane Co.'s 90-year leadership in the field, standardizing on Crane equipment gives you this 3-way advantage:

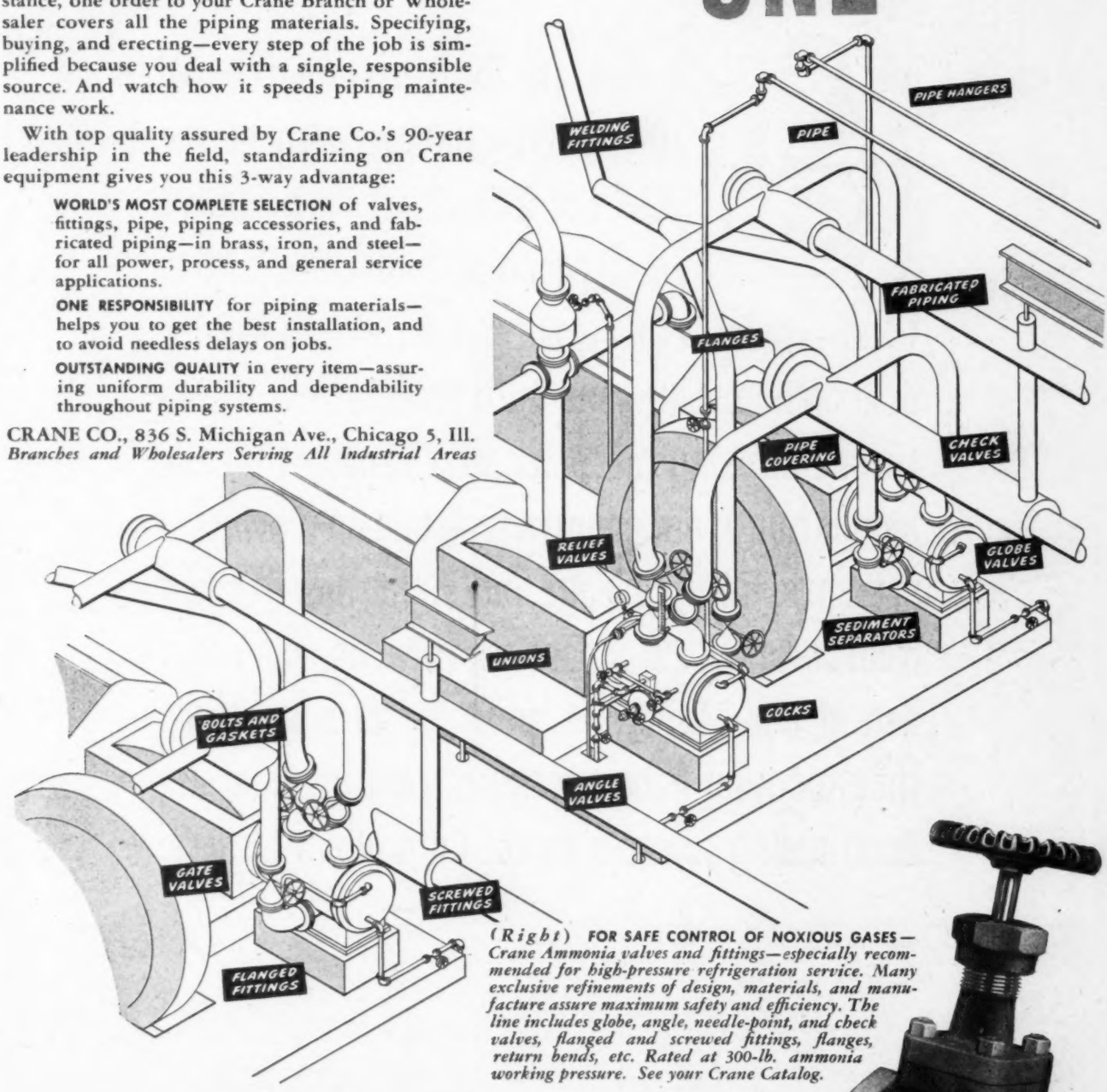
WORLD'S MOST COMPLETE SELECTION of valves, fittings, pipe, piping accessories, and fabricated piping—in brass, iron, and steel—for all power, process, and general service applications.

ONE RESPONSIBILITY for piping materials—helps you to get the best installation, and to avoid needless delays on jobs.

OUTSTANDING QUALITY in every item—assuring uniform durability and dependability throughout piping systems.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

ONE
SOURCE OF SUPPLY
RESPONSIBILITY
STANDARD OF QUALITY



(Right) **FOR SAFE CONTROL OF NOXIOUS GASES**—*Crane Ammonia valves and fittings—especially recommended for high-pressure refrigeration service. Many exclusive refinements of design, materials, and manufacture assure maximum safety and efficiency. The line includes globe, angle, needle-point, and check valves, flanged and screwed fittings, flanges, return bends, etc. Rated at 300-lb. ammonia working pressure. See your Crane Catalog.*

EVERYTHING FROM . . .

VALVES • FITTINGS
PIPE • PLUMBING
HEATING • PUMPS

CRANE

FOR EVERY PIPING SYSTEM

Let Us Keep Faith

On this, the nineteen hundred and forty-sixth anniversary of the birth of Christ, let each American rededicate himself to faith in God—faith in this great nation of ours—faith in his fellowmen—and faith in himself. In these confusing times, let us remember that the foundation of our country was laid on Christian precepts, faith, courage, foresight, and freedom from tyranny. Let us, then, on this natal day of our Redeemer, pray for His guidance that we may have strength, courage, and understanding to carry on the faith of our fathers.

INTERNATIONAL PAPER COMPANY

PRODUCTION EXECUTIVE

Office Equipment and Supplies

Monthly FORMS FORUM

Simple Card Record of Local Suppliers and Suppliers of Specific Products; Permanent Record Card; Auxiliary Purchase Order and Requisition

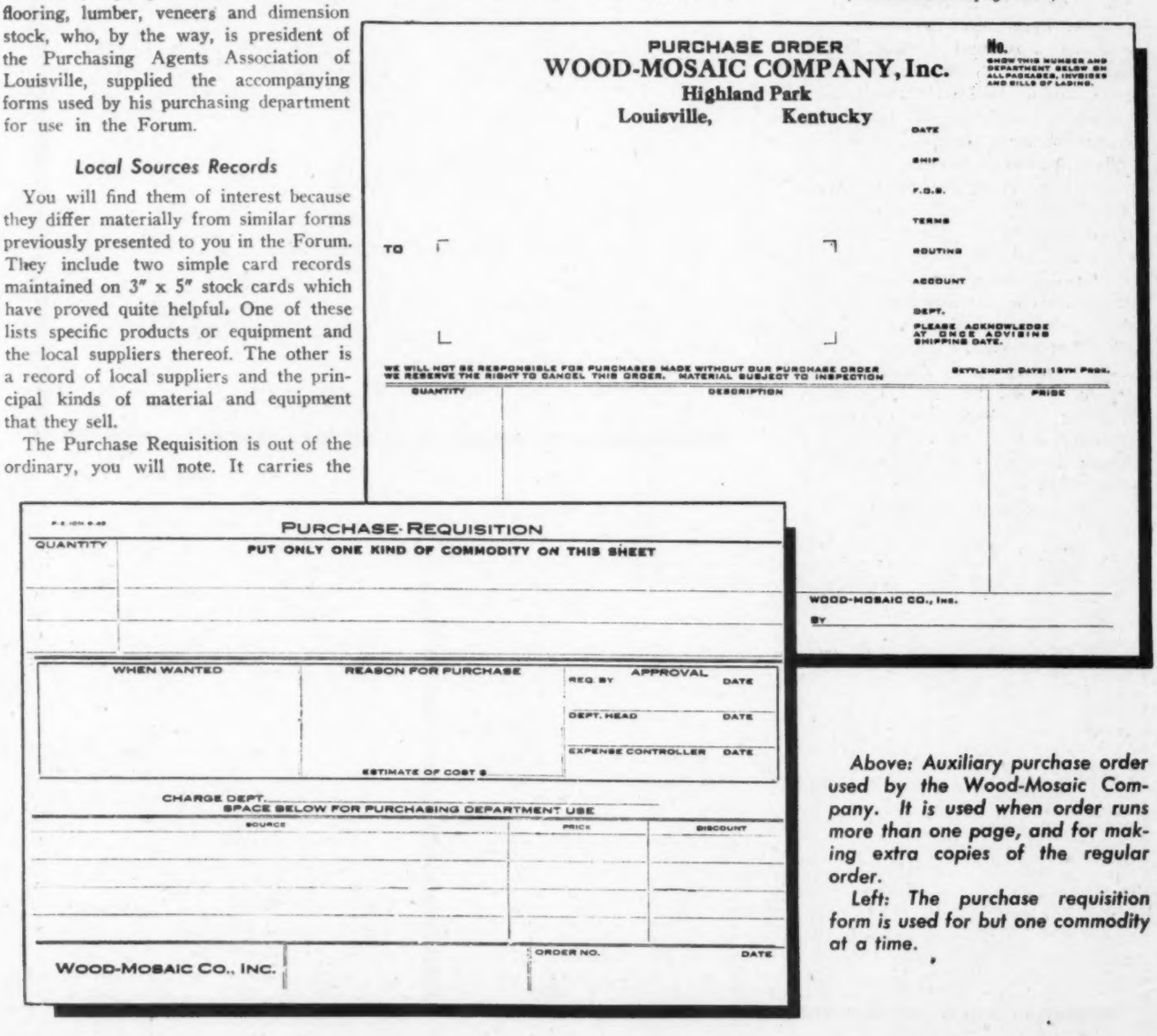
E. V. BULLEIT, assistant treasurer of the Wood-Mosaic Company, Louisville, Ky., producers of hardwood flooring, lumber, veneers and dimension stock, who, by the way, is president of the Purchasing Agents Association of Louisville, supplied the accompanying forms used by his purchasing department for use in the Forum.

Local Sources Records

You will find them of interest because they differ materially from similar forms previously presented to you in the Forum. They include two simple card records maintained on 3" x 5" stock cards which have proved quite helpful. One of these lists specific products or equipment and the local suppliers thereof. The other is a record of local suppliers and the principal kinds of material and equipment that they sell.

The Purchase Requisition is out of the ordinary, you will note. It carries the instruction: "Put only one kind of commodity on this sheet." And for that reason, but three lines at the top of the form are allotted for the order. The requisitions are filed by commodity, and

(*Continued on page* 284)



PURCHASE ORDER
WOOD-MOSAIC COMPANY, Inc.
Highland Park
Louisville, Kentucky

No.
SHOW THIS NUMBER AND DEPARTMENT BELOW ON ALL PACKAGES, INVOICES AND BILLS OF LADING.

DATE
SHIP
F.O.B.
TERMS
ROUTING
ACCOUNT
DEPT.
PLEASE ACKNOWLEDGE AT ONCE ADVISING SHIPPING DATE.

TO

WE WILL NOT BE RESPONSIBLE FOR PURCHASES MADE WITHOUT OUR PURCHASE ORDER
WE RESERVE THE RIGHT TO CANCEL THIS ORDER. MATERIAL SUBJECT TO INSPECTION

SETTLEMENT DATES: 15TH PROX.

QUANTITY	DESCRIPTION	PRICE

WOOD-MOSAIC CO., Inc.
By

PURCHASE-REQUISITION

QUANTITY	PUT ONLY ONE KIND OF COMMODITY ON THIS SHEET

WHEN WANTED	REASON FOR PURCHASE	APPROVAL	
		REQ. BY	DATE
		DEPT. HEAD	DATE
	ESTIMATE OF COST $	EXPENSE CONTROLLER	DATE

CHARGE DEPT.
SPACE BELOW FOR PURCHASING DEPARTMENT USE

SOURCE	PRICE	DISCOUNT

WOOD-MOSAIC CO., INC. | ORDER NO. | DATE

Above: Auxiliary purchase order used by the Wood-Mosaic Company. It is used when order runs more than one page, and for making extra copies of the regular order.

Left: The purchase requisition form is used for but one commodity at a time.

Follow-Up and Inquiry Forms

HERE are a few of the important forms used in the Purchasing Department of The Bossert Company, Inc., producers of heavy to light metal stampings and metal fabricators, Utica, New York, supplied by L. F. Humphrey, Purchasing Agent.

One of these is a follow-up form which is used in tracing orders which have not been acknowledged or show no delivery promise. It is printed on the company's regular letterhead form, and has proved quite practical. It will be noted that the bottom of the form provides form space for reply by the vendor.

"The Inquiry—Not an Order" form is printed on sheet of letterhead size 8¼" x 11". Mr. Humphrey states it has proved very useful and saves considerable time. It is illustrated on page 294.

Form 201 is a simple mimeographed form of much importance made out by the Order Department. It authorizes the purchasing department to buy certain types of material. A second copy of this form is sent to the Steel Stores Department where it authorizes the issuance of the material to the plant for fabrication.

When material is issued out of Steel Stores to the plant, the form "Direct Material Used", No. 315, is used, the original being kept in the Steel Stores Department and the duplicate going to the Cost Department which it supplies with information required for cost records.

The "Lot Order and Schedule" form, No. 302 is made out by the Order Department, is used for scheduling parts throughout the plant. The Purchasing Department notifies the Production Department thereon, where the material is ordered from.

(*Continued on page* 294)

THE BOSSERT COMPANY, INC.

ESTABLISHED 1909

BRANCH OFFICES
DETROIT • NEW YORK

HEAVY TO LIGHT METAL STAMPINGS
DEEP DRAWING . HEAT TREATING
WELDING . . . . ASSEMBLING

CABLE ADDRESS
"BOSSERT"
WESTERN UNION CODE

UTICA 1, NEW YORK

GENTLEMEN:

PLEASE FURNISH IN THE SPACE BELOW INFORMATION CHECKED REGARDING OUR ORDER NO. _____ FOR _____ AND RETURN TO US AT ONCE. IF SHIPPED, SEND INVOICE.

	WE HAVE NO ACKNOWLEDGMENT OF THIS ORDER. PLEASE ADVISE IF YOU HAVE RECEIVED IT AND WHEN SHIPMENT WILL BE MADE.
	YOUR ACKNOWLEDGMENT OF THE ABOVE ORDER GIVES NO SHIPPING DATE. PLEASE ADVISE WHEN WE MAY EXPECT SHIPMENT.
	MATERIAL ON THIS ORDER IS URGENTLY NEEDED. PLEASE RUSH ALL POSSIBLE AND ADVISE SHIPPING DATE AT ONCE.
	SHIPMENT OF ABOVE ORDER WAS PROMISED FOR _____. DID IT GO FORWARD AS SCHEDULED? IF NOT, WHEN WILL DELIVERY BE MADE?
	PLEASE ADVISE WHEN WE MAY EXPECT SHIPMENT OF THE BALANCE DUE ON THE ABOVE ORDER.

VERY TRULY YOURS,

THE BOSSERT COMPANY, INC.

BY _____
PURCHASING AGENT

ORDER WAS SHIPPED / WILL BE SHIPPED _____

FROM _____ VIA _____

CAR INITIAL AND NUMBERS _____ ROUTING _____

REMARKS:

Used for scheduling Orders through plant

Form 302 1-48 5-45 Plant or Assembly BC

LOT ORDER and SCHEDULE

Actual Size 5" x 8"

Plant No. — Lot No.

Customer			Our S. O. No.	Charge Acct.	Date Issued
Plant	Material Made From	Gauge	Material Received	Tools Completed	Date to Ship
	Material Ordered From	Blank	Date Despatched	Primary Mach. No.	Date Completed

REMARKS

SCHEDULE OF DATES TO START MOVING MATERIAL OUT OF THE FOLLOWING DEPARTMENTS

DEPARTMENT															
SCHEDULE OUT															
STARTED OUT															
COMPLETELY OUT															

(*Continued from page* 283)

of themselves provide a complete history of the procurement of that commodity. They are kept for one year, and then disposed of.

In addition to being initialed by the person requisitioning the material, the requisition is approved by the head of the particular department concerned, and then by the expense controller. The lower part of the form is for purchasing department use.

The Purchase Order form reproduced is what may be termed an auxiliary form which is used whenever an order runs more than one page (it is not serially numbered), or whenever a copy of the regular purchase order form is lost. The actual size of this form is 7½" deep by 8½" wide. It was designed this way so that it might be placed in a window envelope, with one fold.

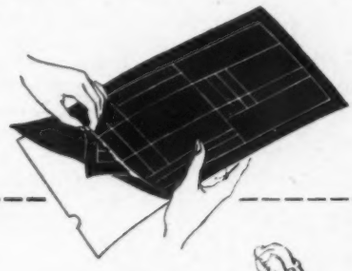
Three copies of the Purchase Order

(*Continued on page* 288)

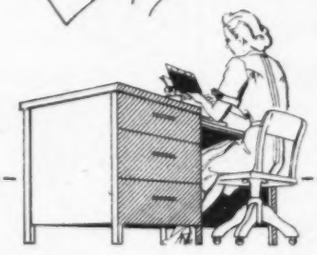
The 1-2-3 of paper work production

Speed it . . . control it . . . save money on it—
with Mimeograph brand die-impressed stencils . . .

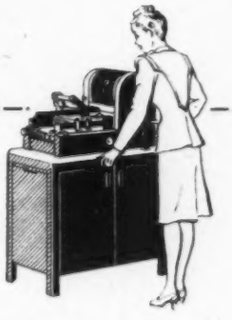
A single writing gives you as many copies as you need on the kinds of forms you want to use—that's the big advantage Mimeograph brand die-impressed stencils give to paper work procedures.



1 Your own ruled forms or headings are die-impressed into Mimeograph brand stencil sheets.



2 All your typists do is add the variable, fill-in material by typewriter.



3 Then the completed form and variable information are produced together in one operation on the Mimeograph brand duplicator.

FREE *Send for more information on Mimeograph brand die-impressed stencils—how they speed production, save money, and simplify control of paper work systems and procedures.*

It's as simple and easy as that. You don't have to wait for preprinted forms—or stock and store obsolescent forms. One proofreading is enough—for all copies are identical. And all copies are easy to read, clear, black-and-white, non-smudging, non-fading.

For complete details and the assistance of experts in factory paper work problems, write A. B. DICK COMPANY, 720 West Jackson Boulevard, Chicago 6, Illinois.

A. B. DICK COMPANY, Dept. P-1246
720 West Jackson Boulevard, Chicago 6, Illinois

Please send me a free copy of the new folder, *Mimeograph Die-Impressed Stencils.*

NAME.....

ORGANIZATION.....

STREET.....

CITY.....STATE.....

Mimeograph brand duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

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WHAT'S THE LIFE OF AN INSURANCE POLICY?

10 years? . . . 20 years? . . . a lifetime? And the paper must be as white . . . the printing as legible as the day it was issued. Ask your printer how you can be sure of this kind of permanency for *every type of document*. Paper is his business—he knows it intimately. As an expert he will almost certainly call your attention to

Rising Parchment

√100% rag √Super Opaque √4 weights
√Distinctive unglazed parchment finish

When you want to KNOW . . . go to an expert!

Rising Papers

Ask your printer . . . he KNOWS paper!

Rising Paper Company, Housatonic, Mass.

your 1947 CALENDAR *is now available!*

Giant Dates 1¾" High

One Week featured

Each Weekly page includes full, current, past and future month

FREE

REQUEST FOR FREE 1947 CALENDAR

THE FREDERICK POST COMPANY

3650 North Avondale Ave., Chicago 18, Illinois

Detroit—Houston—CHICAGO—Los Angeles—Milwaukee

JOHN S. COLEMAN NEW PRESIDENT OF BURROUGHS ADDING MACHINE OTHER EXECUTIVE CHANGES

John S. Coleman has been named president of the Burroughs Adding Machine Company, Detroit, succeeding Alfred J. Doughty who resigned as president and a director on the advice of his physician. The change was effective October 15.

Mr. Coleman, a graduate lawyer, had been a vice-president and director of Burroughs since May, 1944. Although only 49 years old, he brings to his new assignment more than 26 years' experience in Burroughs marketing and manufacturing.

Alfred J. Doughty had been closely connected with Burroughs machines over a period extending back to 1884 when, as a boy, he became associated with William Seward Burroughs in the invention and assembly of the world's first practical adding machine. He was vice-president and a director from 1923 to 1943 and president from 1943 until his resignation.

Mr. Coleman, the youthful new president, interrupted his law studies to enter the army in the First World War. He

John S. Coleman, President Burroughs Adding Machine Co.

completed his pre-legal training following his discharge, then joined with the Washington, D. C., branch of the Guaranty Trust Company. Later, he served with the Federal Board of Vocational Guidance before being graduated in law and admitted to the bar.

He began his Burroughs career in March, 1920, as a junior salesman at the Company's Washington branch, where he became assistant manager and, in 1937, division manager.

With the outbreak of World War II, Mr. Coleman assumed the critical responsibilities of liaison man between Burroughs and the Government. While in that capacity, he became assistant to the vice-president. In March, 1943, he moved to Detroit as executive assistant and became a vice-president and director the following year.

In addition to the resignation of Mr. Doughty and the appointment of Mr. Coleman, Burroughs also announced a number of other executive changes. These changes involved promotion of:

Laurence V. Britt, former executive vice-president, to chairman of the board of directors and chairman of a newly-formed executive committee.

John L. Stewart, formerly vice-presi-

(*Continued on page 292*)

Here's one TIP

Visible Follow-up
combined with purchase-order record file!

Now, more than ever alert purchasing men are using the famous Follow-Up Folder with Visible Tip to maintain *continuous pressure* on suppliers for prompt delivery of goods ordered.

It's the most practical, easy-to-operate and effective expediting control ever devised!

Sliding colored signals flash follow-up dates of all orders in the file—instant and positive selection each day of all items requiring action. Filing in alphabetic or numeric sequence, with copies of related correspondence *right in the record*, means faster reference—*no separate tickler files required.*

Time-saving, efficient Visible Tip Follow-Up Folders are *economical*, too!—may be re-used indefinitely by changing of removable title inserts.

MORE PRACTICAL TIPS . . . on all phases of Purchasing Department administration are available to you in this FREE book: "Purchasing Department Records and Routines"—64 illustrated pages devoted to helping you meet the many pressing difficulties of Purchasing today. Write us now—WITHOUT OBLIGATION.

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Remington Rand

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COMMERCIAL FORMS AND SYSTEMS

An ally of modern management, Reynolds and Reynolds *is* one of the world's largest suppliers of printed or lithographed control and operational forms.

- CARBON INTERLEAVED SYSTEMS
- BUSINESS MACHINE FORMS
- PAYROLL CHECKS and SYSTEMS

Effective Advertising Literature, Distinctive Stationery and Business Forms of every kind

The REYNOLDS & REYNOLDS COMPANY • DAYTON 7, OHIO

Established 1866

SALES OFFICES IN MANY PRINCIPAL CITIES

(*Forms Forum—Continued from page* 284)

WMCo Actual size 5" x 8"

SUPPLIER	ORDERED	ORDER NUMBER	QUANTITY	DEPT	PRICE	F. O. B. POINT	RATING	DELIVERED	REMARKS

Permanent Record Card. One is made for each commodity purchased

are made up — for supplier, duplicate for the department requisitioning the material, and the third is kept in a tickler file in the purchasing department. After the material has been received, this copy is so noted and placed in an alphabetical file to await receipt of the invoice. Upon receipt of invoice, due record is made on this copy which is then filed numerically.

The Permanent Purchasing Department File Card, reproduced on this page, is a commodity record, which is maintained in an alphabetical file as a permanent record. A card is made for each commodity purchased. This card shows the name of the supplier, the date of the order, the order number, quantity ordered, department using material, the price, f.o.b. point, and date of delivery, plus a remarks column. The reproduction of this 5" x 8" card also carries a "rating" column which was used for indicating priority ratings during the war, and will be eliminated when form is reprinted.

(*Continued on page* 290)

Adjustable Clamp Co. — C-clamps, adjustable Clamps

414 N. Ashland
Chicago, Ill.

DEALERS: Oglesby & Simpson Supply Co.
432 E. Broadway, City 2

Todd-Donigan Iron Co.
811 W. Main St., City 2

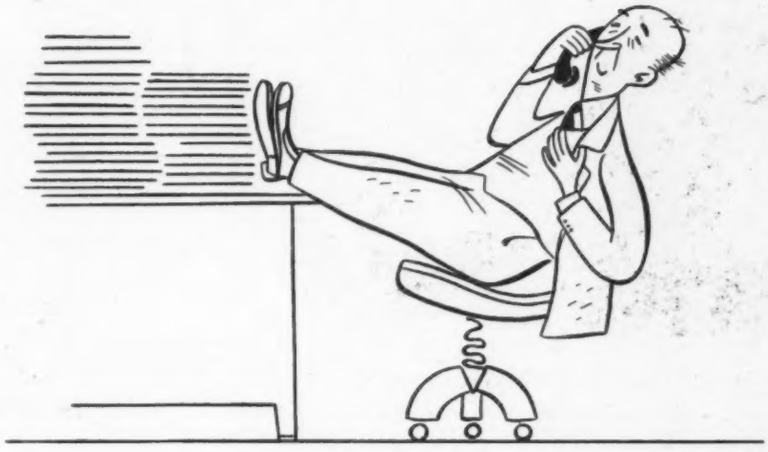
WMCo

Record of Commodities and local suppliers thereof

Bohnert Equipment Co.
104 West Main St. City 2

Economy Engineering Co.	-	The telescoper
Yale & Towne Mfg. Co.	-	Lift trucks & skid platforms
Hough Shade Corp.	-	Ventilating shades
Cushman Motor Works	-	Auto-glides
Nutting Truck&Caster Co.	-	Floor wheels, trucks, casters
Elizabeth Iron Works	-	Bridge Ramps

Local suppliers and principal material or equipment handled by them



You Can Do It All With Two Words

The executives and their ever-faithful secretaries want better letterheads. The bookkeepers want better ledger paper. The duplicating machine operators are yelping for paper that will insure better results.

What to do?

Just keep two easy-to-remember words in the back of your mind and you're all set. The words...Eastern's Atlantic.

Yes, when you're ordering paper, specify Eastern's Atlantic Bond for letterheads and envelopes, Eastern's Atlantic Ledger for your bookkeepers, and Eastern's Atlantic Mimeo or Duplicator for your duplicating machine operators.

EASTERN'S Atlantic

BOND • MIMEO • LEDGER • DUPLICATOR

MADE BY
EASTERN CORPORATION
BANGOR, MAINE

WANT 3 'ORIGINALS' of Audits, Reports, Financial Statements IN ONE WRITING?

Accountants and top executives do! For so desirable are dignity, conviction, color clarity and uniformity in important reports, that CPA's willingly sanctioned the extra typing time required to prepare three duplicate originals.

In today's increasing demands for all types of financial reports, this *time-taking retyping of originals is no longer necessary!*

Columbia ACCOUNTANT SPECIAL CARBON PAPER

a specially manufactured, hard surface, smudge proof carbon sheet for accountants, produces carbon copies so impressive that they can hardly be distinguished from the original.

Best matched with these copies, for clarity and color, are superb originals typed with Columbia Classic Typewriter Ribbons, companion products to Accountant Special. And to compensate for uneven typing touch, to assure even impressions, supply your typists with inexpensive Columbia Backing Sheets, which slip easily into the machine between the last carbon copy and the platen.

Ask your office supply dealer or the Columbia office nearest you for demonstration and prices.

MANUFACTURED BY
COLUMBIA RIBBON & CARBON MANUFACTURING CO., INC.
Main Office & Factory: Glen Cove, L. I., N. Y.
New York Sales & Export: 58-64 West 40th St. Midwest Sales: Kansas City, Mo., Dwight Bldg. Chicago • Detroit • Milwaukee • Minneapolis Nashville • Philadelphia • Pittsburgh • Portland, Oregon • Cincinnati (Harris-Moers Co.) • Atlanta
Also: London, England • Sydney, Australia • Milan, Italy

(*Forms Forum—Continued from page* 288)

On page 288 you will find the local vendor record cards previously referred to, one listing vendors and principal products sold by them, and the other important products used by the company and the local vendors thereof. The information on these cards is obtained from letters, advertising material and salesmen. Mr. Bulleit says they are very valuable records, and save a lot of telephoning and letter writing.

FREE BOOKLET ON LETTERHEADS

A delight to the eye is this new booklet entitled "A Fine Letterhead is a Business Asset" just issued by the American Writing Paper Corporation. But, be-

yond this eye-appeal is a logical story, tastefully illustrated and interestingly written.

The keynote of this booklet's story is the fact that every letter written carries a message much greater in scope than its words alone convey. It takes up in detail such important components of a letterhead as appearance, taction, workability, permanence and cost — each of which is a contributing factor in designing the type of letterhead that is a sound investment—a business asset.

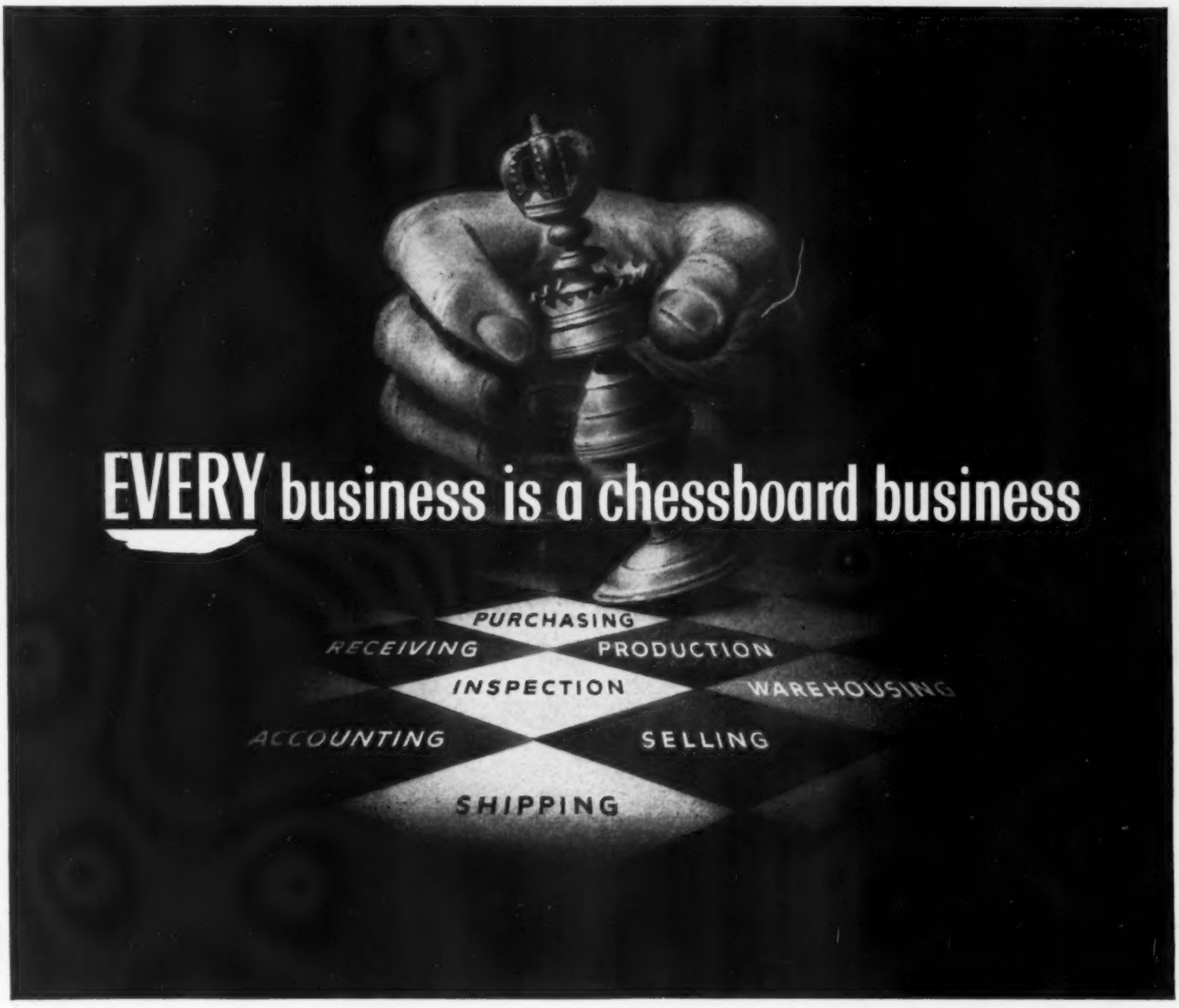
Written in the interests of better business stationery, this booklet will be helpful to users, designers and producers of business letterheads. A copy is available to those who write for it on their business letterhead.

NEW EVERSHARP TRAFFIC MANAGER

Carl H. Dankers has been appointed general traffic manager of Eversharp, Inc., it was announced today by Alfred C. Howard, vice president in charge of manufacturing. He will be in charge of traffic at five Eversharp plants manufacturing precision writing and shaving instruments in New York, Chicago, Denver and Toronto.

Dankers, formerly assistant general traffic manager of Fairbanks, Morse & Company, joins Eversharp after 27 years with that company and 10 years with the Rock Island Railroad.

(*Turn to page* 292)



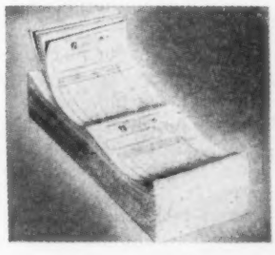
Careful there, Mr. Businessman . . . you're playing for profits. And the moves your product makes from planning to selling are all-important.

Better check into the forms responsible for these moves . . . the routine orders and records that guide such business functions as purchasing, receiving, production, inspection, warehousing, accounting, selling, and shipping. And if there's the slightest doubt as to the efficiency of your present forms, you'll want to call in your UARCO representative. Thousands of businesses, large and small, have done this —and found it to be one of their smartest business moves.

For fifty years UARCO has been streamlining business forms to meet the specific needs of thousands of diverse businesses. Your UARCO representative can show you how these forms have brought new speed, accuracy, and efficiency to routine operations . . . and impressive new savings to business budgets. Chances are, UARCO forms can do the same for your business. So call or write today. UARCO INCORPORATED, Chicago, Cleveland, Oakland. *Offices in All Principal Cities.*

For Instance . . .

UARCO Multi-Fold Continuous Forms permit typists and business machine operators to use their time more productively. The shuffling and arrangement of carbons is eliminated. Forms feed steadily through machine and up to 12 clear copies can be made at once.

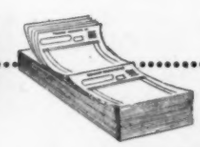


AUTOGRAPHIC REGISTERS AND REGISTER FORMS

SINGLE SET FORMS

UARCO
INCORPORATED

BUSINESS FORMS



CONTINUOUS-STRIP FORMS FOR TYPEWRITTEN AND BUSINESS MACHINE RECORDS

(*Continued from page* 286)

dent and treasurer, to the position of executive vice-president. Mr. Stewart now combines the duties of executive vice-president and treasurer.

Thomas G. Long, Burroughs legal counsel for the past 30 years, to the board of directors filling the vacancy there caused by Mr. Doughty's retirement.

Raymond G. Bower, director and general factory manager, to vice-president engineering.

Ray R. Eppert, sales manager, to vice-president marketing.

Sheldon F. Hall, former special representative in Washington, to assistant secretary and assistant treasurer.

1 1 1

FOLDING UTILITY TABLE

New small utility table is announced by Howe Folding Furniture, Inc., of One Park Avenue, New York City. The table,

Folds to about three inches

Howe folding utility table

Model MW, has an automatic action in opening and closing, is very rigid and has no locks to wrestle with. When opened the table measures 26½" x 14¾" and is 26½" high. It folds to approximately 3". Finishes are in brown mahogany or honey maple.

The folding table lends itself to many uses in clubs, hotels, hospitals, schools and varied institutions.

1 1 1

PAPER AND PRINTING QUIZ

Series of advertisements published by the Kimberly-Clark Corporation of Neenah, Wis., using the theme "Test Your

(*Continued on page* 296)

*Levelcoat** PRINTING PAPERS

A PRODUCT OF Kimberly Clark RESEARCH

Distributed by

ALABAMA
Birmingham ... Sloan Paper Company

ARIZONA
Phoenix ... Zellerbach Paper Company

ARKANSAS
Little Rock ... Arkansas Paper Company

CALIFORNIA
Eureka ... Zellerbach Paper Company
Fresno ... Zellerbach Paper Company
Los Angeles ... Zellerbach Paper Company
Oakland ... Zellerbach Paper Company
Redding ... Zellerbach Paper Company
Sacramento ... Zellerbach Paper Company
San Diego ... Zellerbach Paper Company
San Francisco ... Zellerbach Paper Company
San Jose ... Zellerbach Paper Company
Stockton ... Zellerbach Paper Company

COLORADO
Denver ... Carpenter Paper Company
Pueblo ... Carpenter Paper Company

CONNECTICUT
Hartford ... The Rourke-Eno Paper Co., Inc.
New Haven ... Bulkley, Dunton & Co., Inc.

DISTRICT OF COLUMBIA
Washington ... The Barton, Duer & Koch Paper Co.

FLORIDA
Jacksonville ... Knight Brothers Paper Company
Miami ... Knight Brothers Paper Company
Orlando ... Knight Brothers Paper Company
Tallahassee ... Knight Brothers Paper Company
Tampa ... Knight Brothers Paper Company

GEORGIA
Atlanta ... Sloan Paper Company

IDAHO
Boise ... Zellerbach Paper Company

ILLINOIS
Chicago ... Berkshire Papers, Inc.
Chicago ... Chicago Paper Company
Chicago ... Midland Paper Company
Springfield ... Capital City Paper Company

INDIANA
Indianapolis ... Crescent Paper Company

IOWA
Des Moines ... Carpenter Paper Company
Sioux City ... Carpenter Paper Company

KANSAS
Topeka ... Carpenter Paper Company
Wichita ... Western Newspaper Union

KENTUCKY
Louisville ... The Chatfield Paper Corp.

LOUISIANA
Baton Rouge ... Louisiana Paper Co., Ltd.
New Orleans ... The D and W Paper Co.
Shreveport ... Louisiana Paper Co., Ltd.

MARYLAND
Baltimore ... Baltimore Paper Company, Inc.

MASSACHUSETTS
Boston ... Carter, Rice & Company Corp.
Worcester ... Charles A. Esty Paper Company

MICHIGAN
Detroit ... Seaman-Patrick Paper Co.
Grand Rapids ... Carpenter Paper Company

MINNESOTA
Duluth ... John Boshart Paper Company
Minneapolis ... Carpenter Paper Company
St. Paul ... Carpenter Paper Company

MISSOURI
Kansas City ... Carpenter Paper Company
St. Louis ... Beacon Paper Company
St. Louis ... Shaughnessy-Kniep-Hawe Paper Co.
St. Louis ... Tobey Fine Papers, Inc.

MONTANA
Billings ... Carpenter Paper Company
Butte ... Carpenter Paper Company
Great Falls ... Carpenter Paper Company
Missoula ... Carpenter Paper Company

NEBRASKA
Lincoln ... Carpenter Paper Company
Omaha ... Carpenter Paper Company

NEVADA
Reno ... Zellerbach Paper Company

NEW JERSEY
Newark ... J. E. Linde Paper Company

NEW MEXICO
Albuquerque ... Carpenter Paper Company

NEW YORK
Albany ... Hudson Valley Paper Company
Brooklyn ... A. Price & Son, Inc.
Buffalo ... Paper Service, Inc.
Buffalo ... Union Paper & Twine Co., Inc.
New York ... Baldwin Paper Comapny, Inc.
New York ... Bulkley, Dunton & Co., Inc.
New York ... The Canfield Paper Co.
New York ... Forest Paper Company, Inc.
New York ... J. E. Linde Paper Company
New York ... A. Price & Son, Inc.
New York ... Royal Paper Corporation
Rochester ... Paper Service, Inc.
Syracuse ... Paper Service, Inc.
Troy ... Troy Paper Corporation

NORTH CAROLINA
Charlotte ... Dillard Paper Company, Inc.
Greensboro ... Dillard Paper Company, Inc.

NORTH DAKOTA
Fargo ... Western Newspaper Union

OHIO
Cincinnati ... The Chatfield Paper Corporation
Cleveland ... The Petrequin Paper Company
Columbus ... The Scioto Paper Company
Toledo ... The Ohio & Michigan Paper Co.

OKLAHOMA
Oklahoma City ... Carpenter Paper Company
Tulsa ... Tayloe Paper Company of Oklahoma

OREGON
Eugene ... Zellerbach Paper Company
Portland ... Zellerbach Paper Company

PENNSYLVANIA
Philadelphia ... Paper Merchants, Inc.
Philadelphia ... D. L. Ward Company
Pittsburgh ... The Chatfield & Woods Co. of Pa.

RHODE ISLAND
Providence ... Carter, Rice & Company Corp.

SOUTH CAROLINA
Greenville ... Dillard Paper Company, Inc.

TENNESSEE
Chattanooga ... Bond-Sanders Paper Co.
Knoxville ... Southern Paper Company, Inc.
Memphis ... Tayloe Paper Company.
Nashville ... Bond-Sanders Paper Co.

TEXAS
Austin ... Carpenter Paper Company
Dallas ... Carpenter Paper Company
Fort Worth ... Carpenter Paper Company
Harlingen ... Carpenter Paper Company
Houston ... L. S. Bosworth Co., Inc.
Houston ... Carpenter Paper Company
Lubbock ... Carpenter Paper Company
San Antonio ... Carpenter Paper Company

UTAH
Salt Lake City ... Zellerbach Paper Company

VIRGINIA
Richmond ... Cauthorne Paper Company

WASHINGTON
Seattle ... Zellerbach Paper Company
Spokane ... Zellerbach Paper Company
Walla Walla ... Zellerbach Paper Company
Yakima ... Zellerbach Paper Company

WISCONSIN
Milwaukee ... The Bauer Paper Company

EXPORT AGENTS
American Paper Exports, Inc., New York, U. S. A.
Cable Address: APEXINC—New York

If our distributors cannot supply your immediate needs, we solicit your patience. There will be ample Levelcoat Printing Papers for your requirements when our plans for increased production can be realized.

KIMBERLY-CLARK CORPORATION · NEENAH, WISCONSIN

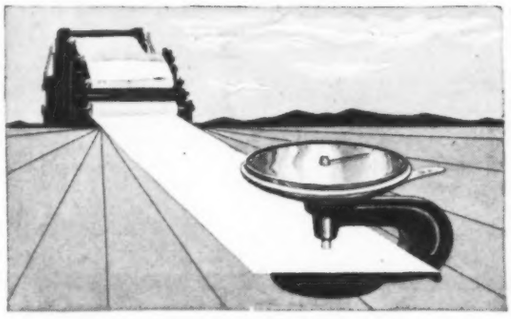
122 East 42nd Street, NEW YORK 17
155 Sansome Street, SAN FRANCISCO 4
8 South Michigan Avenue, CHICAGO 3
22 Marietta Street, N. W., ATLANTA 3

*TRADEMARK

This advertisement is one of a series appearing in four colors in Fortune, Nation's Business, United States News, Newsweek and Business Week.

Test your word knowledge

of Paper and Printing

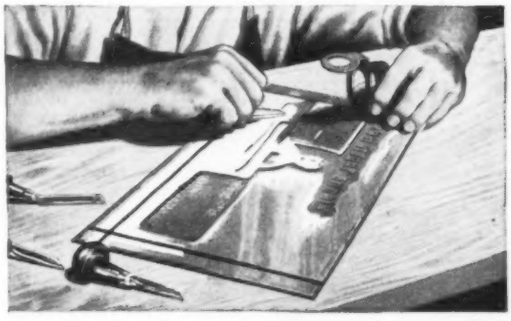


1. Caliper

- ☐ Machine for finishing paper
- ☐ Paper stock in the beater
- ☐ Thickness of a sheet of paper

2. Advertising Mascot

- ☐ A copy cub
- ☐ A trademark
- ☐ An advertising slogan



3. Feel

- ☐ A method of hand tooling
- ☐ Way of detecting irregularities in plates
- ☐ Paper quality as determined by touch

4. Typothetae

- ☐ A species of coniferous pulpwood
- ☐ Ecclesiastical manuscripts
- ☐ Printers

ANSWERS

1. Caliper is the thickness of a sheet of paper as measured under prescribed conditions. By careful control in manufacture, and by rigid laboratory testing, Kimberly-Clark maintains a close uniformity of caliper for Levelcoat*—a factor which contributes greatly to printability.

2. Advertising Mascot is a trademark which identifies a product for the buyer's protection. Such a trademark is *Levelcoat*—identifying a line of dependable printing papers.

3. Feel is the quality of paper as determined by touch. For printing paper with the feel of richness and high quality, many fine printers and important advertisers prefer smooth, lustrous Levelcoat Papers.

4. Typothetae are printers. And to all printers, advertisers, publishers, paper men—to everyone interested in finer paper for finer printing results—Kimberly-Clark wishes a very Merry Christmas and a most prosperous New Year.

Levelcoat*

PRINTING PAPERS

If our distributors cannot supply your immediate needs, we solicit your patience. There will be ample Levelcoat Printing Papers for your requirements when our plans for increased production can be realized.

A PRODUCT OF Kimberly Clark RESEARCH

KIMBERLY-CLARK CORPORATION

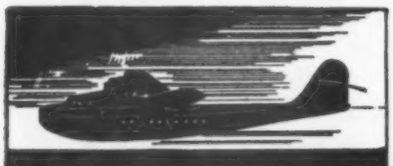
NEENAH, WISCONSIN *TRADEMARK

Old Town

RIBBONS
CARBONS
Duplicating
Supplies

For those who prefer the best

BROOKLYN 17, N. Y.



THIN PAPERS
Reduce
TYPING, MAILING
and FILING COSTS

Specify one of
ESLEECK
THIN PAPERS

Ideal for Air Mail, Branch Office and Foreign correspondence.

ESLEECK MANUFACTURING COMPANY
TURNERS FALLS, MASSACHUSETTS

Forms Forum (*Continued from page 284*)

PURCHASING DEPARTMENT
THE BOSSERT COMPANY, INC.
Metal Stampings
UTICA, N. Y.

INQUIRY - NOT AN ORDER

To _____

Actual Size 8½" x 11"

THIS IS A REQUEST FOR QUOTATION AT YOUR LOWEST PRICE TO BE IN OUR HANDS ON OR BEFORE. _____

DATE

1. ALL PRICES AND CONDITIONS MUST BE SHOWN. ADDITIONS FOR PACKING OR OTHER ITEMS NOT SHOWN ON THIS BID WILL NOT BE ALLOWED.
2. ATTACH COMPLETE SPECIFICATIONS FOR ANY SUBSTITUTIONS OFFERED, OR WHEN AMPLIFICATION IS DESIRABLE OR NECESSARY.
3. THE SELLER AGREES, AT ITS OWN EXPENSE, TO DEFEND, PROTECT AND SAVE HARMLESS, THE BOSSERT COMPANY, INC. AND ITS SUBSIDIARY OR AFFILIATED COMPANIES, ITS OR THEIR SUCCESSORS OR ASSIGNS, CUSTOMERS AND THE USERS OF ITS OR THEIR PRODUCT, AGAINST ALL SUITS, AT LAW OR IN EQUITY, AND FROM ALL DAMAGES, CLAIMS, DEMANDS, AND JUDGMENTS FOR ACTUAL OR ALLEGED INFRINGEMENT OF UNITED STATES OR FOREIGN LETTERS PATENT BY REASON OF THE SALE OR USE OF THE ARTICLES HEREBY QUOTED.

STATE TERMS OF PAYMENT

THE BOSSERT COMPANY, INC.,

By _____
PURCHASING AGENT

BC FORM 201 PURCHASE REQUISITION FOR RAW MATERIAL

Actual Size 5½" x 8½"

DATE

OUR S.O. NUMBER _____ OUR PIECE & LOT NO. _____ FOR _____

QUAN.	PIECE NO.	ARTICLE	GAUGE & MATERIAL	APPROX. WT. PER M.

BLANK _____ VENDOR _____
DELIVERY _____ DATE ORDERD _____
STOCK SIZE _____ PURCH. ORDER NO. _____
DATE WANTED _____

Form 315 12-45 5M BC

DIRECT MATERIAL USED

(ROUGH STOCK)

To Make Quantity (Blanks)	To Make Piece No.	Lot No.

To Make Piece Name

Size of Card 4" x 6"

Material Used	Blanked	Weight	Cost	Amount

Scrap Returned

From Stores	DELIVER TO		Entered S. R. C.	Date
	Dept.	Primary Mach.		Signed

wilted at 5 o'clock?

...maybe she needs to brush up on her **TYPING TECHNIQUE**

FIRST **she must be alert, relaxed and comfortable. She should sit upright. Her feet should be firm, not crossed or wrapped around chair. Good form is very important.**

HANDS **should be in rest position, forearms parallel with keyboard (about 30 degree angle). No pounding needed, just use rhythmic fingering with the wrists relaxed.**

TRIPLE **posed drawing shows how back, neck and eye strain result from bad posture. With typing technique and the right machine she'll find typing lots easier.**

FIVE O'CLOCK **and still relaxed because she uses the proper technique and has a Smith-Corona typewriter... engineered for her comfort and easier typing. See below**

"As far as upkeep is concerned," said a motion picture executive, "there just doesn't seem to be any!" And a busy New York secretary wrote, "Somehow, working has suddenly become pleasurable"... just *one week* after receiving her "beautiful, new Smith-Corona!"

These comments are typical of the support Smith-Corona receives from both the girls behind the machines and the men who buy them.

Prove it yourself! Match Smith-Corona against any other make. Weigh its performance in terms of cost, dependability, precision of write and ease of operation. Then... decide your next purchase on the outcome.

ONE HAND AUTOMATIC MARGIN SET

One hand, one lever needed to set or clear right and left margins. It's easier and a lot faster.

REMOVABLE PLATEN

...lifts out easily. Manifolding, label writing made easier by substituting special platens. Feed rolls easy to clean.

7/5	10	10,000.75
7/6	5	5,000.50
7/8	1	1,000.10
	20	20,001.00

TABULATOR

Makes typing in columns easy. One key sets stop for each column. Stops cleared individually or all at once at a touch. Speedier, less fatigue.

You'll find it easier with a **Smith-Corona**

L C SMITH & CORONA TYPEWRITERS INC SYRACUSE 1 N Y

. . makers also of Smith-Corona Portable Typewriters

For Speed, Ease and Accuracy—

Elliot Fisher Machines Do Better Work Faster . . . with Old Dutch Carbon Rolls

OLD DUTCH CARBON ROLLS

You want crisp, clean-cut carbon copies that retain their legibility longer — that's your cue to order Old Dutch carbon rolls Their efficient performance on the Elliot Fisher machine saves you time, money and "do-over" jobs.

STYLES FOR EVERY NEED

- Available in single and multi-ply rolls.
- Correct weights and finishes for every requirement.
- Choice of colors, including hectograph carbon.

WATERS & WATERS BRANCH

511 LOCUST STREET, ST. LOUIS

LOS ANGELES, CALIF. SAN FRANCISCO, CALIF.

Oxford "PENDAFLEX" STEEL *Reg. U. S. Pat. Off.

UTILITY DESK

Why jump between file and desk? Work in one spot with this ingenious combination desk and file. Saves time and steps.

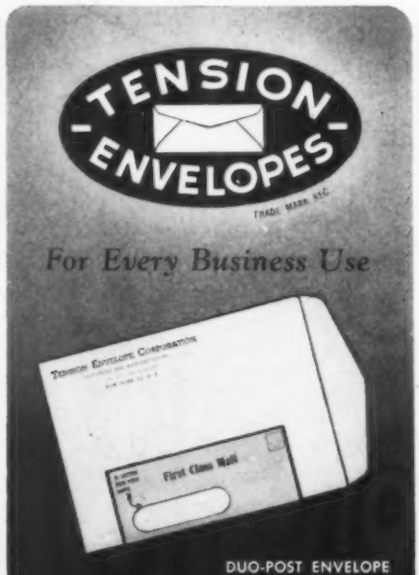
Big sturdy desk is 42" by 24".

And that's no ordinary file, but PENDAFLEX, the hanging-folder file that brings a new thrill—discovery of the world's fastest, easiest filing method.

Speeds up all clerical work on filed papers. Use it for sorting mail or correspondence.

Any small business, with limited but essential writing—filing activities will find the U. D. a triple miracle: desk, file, and typewriter stand for the price of one!

OXFORD FILING SUPPLY COMPANY, INC.
320 Morgan Avenue, Brooklyn 6, N. Y.
Send this coupon today for illustrated leaflet and name of dealer.
NAME .....
ADDRESS .....
CITY ..... ZONE .... STATE .....



DUO-POST ENVELOPE
LETTER AND CATALOG ARRIVE TOGETHER

TENSION ENVELOPE CORP.

FIVE FACTORIES
SELLING DIRECT TO THE USER

New York 14, N. Y. * Minneapolis 15, Minn.
St. Louis 3, Mo. * Des Moines 14, Iowa
Kansas City 8, Mo.

(*Continued from page 292*)

Word Knowledge of Paper and Printing" have been put in booklet form. Copy of the booklet is available for the asking. Some of the 24 questions answered are: "What is Hygroscopicity?", and "What is Meant by Pericles?", dragon's blood? underlay? etc.

3-6 PAPER PUNCH

Master Products Manufacturing Company, 3480 E. 22nd St., Los Angeles, Calif., announces heavy duty Model AP paper punch. The punch is made to accommodate from 3 to 6 punch heads, providing for all standard hole punchings.

Model AP is designed for easy and efficient operation, and incorporates modern styling. The long curved handle gives powerful leverage so that a maximum of 3/16" of material may be cleanly punched. A fully calibrated scale on the front table provides for easy positioning of the paper guide and die heads. Punch heads may be quickly reset by releasing the knurled thumb screws and moving

From 3 to 6 puncheads may be used for any opening.

heads to the desired position. From 3 to 6 punch heads may be used for any spacing. The extra wide front table is 7¼" x 10¾" large enough to prevent tilting and fitted with rubber feet which will not mar any surface. Present production is limited to ¼", 5/16" and ⅜" round hole punches, but other sizes and shapes will be available soon.

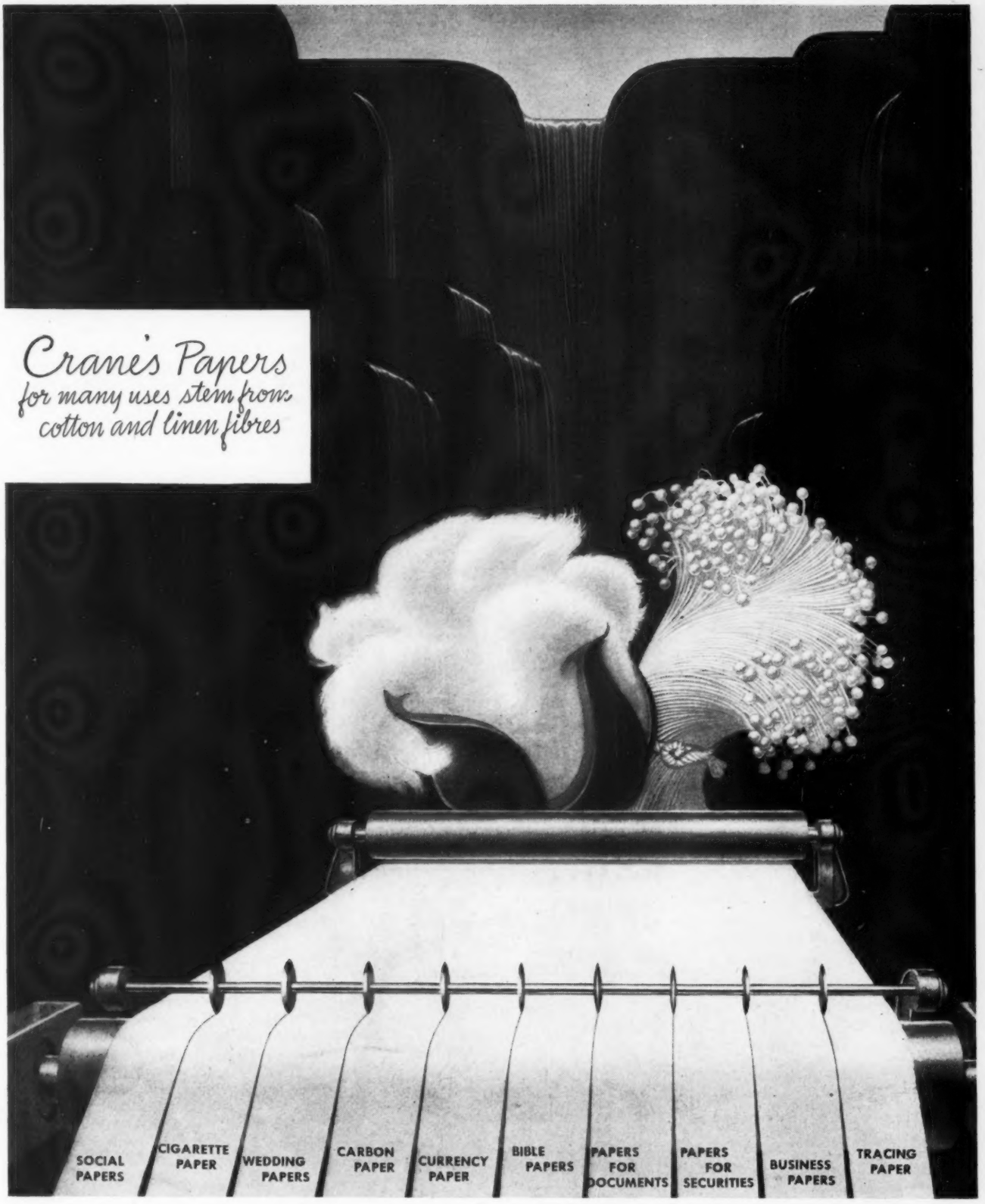
HARTFORD OFFICE OF COMMERCIAL CONTROLS IN NEW LOCATION

E. H. Ambrosia, manager of the Hartford, Conn., branch of Commercial Controls Corporation of Rochester, N. Y., advises that his headquarters are now at 71 Farmington Avenue, Hartford. The company manufactures metered mail machines, check endorsing machines, and pay and production control systems.

SMEAD ACQUIRES GENERAL FIREPROOFING PAPER PRODUCTS DIVISION

Walter Bender, President of The General Fireproofing Company, Youngstown, Ohio, announced recently that the company had sold its Paper Products Division (indexes, folders and guides) including all finished inventory, raw material and machinery to The Smead

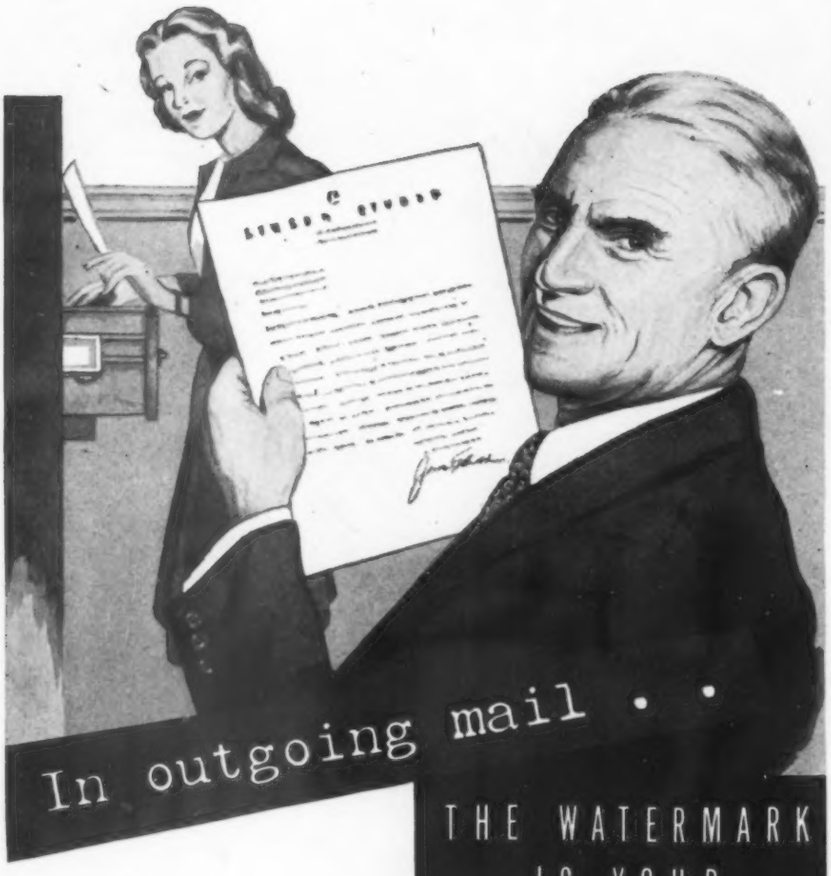
(*Continued on page 298*)



Crane holds fast to its 145 years of making papers from cotton and linen fibres *only* for the sound and practical reason that no other materials can give paper the same enduring quality, the same distinctive, distinguished character. With hands of skill, on modern machines, Crane converts these fibres—born of the soil and the sun—into papers for business, personal and social use. Some are thin papers; some are papers of greater substance; all are papers that will stand the test of time and usage . . . speak for you as you would speak for yourself . . . carry your words and records into the years to come. In buying paper, the Crane watermark is your guide to papers of traditional quality produced in the modern manner.

CRANE'S FINE PAPERS

MADE IN DALTON, MASSACHUSETTS • SINCE 1801



THE WATERMARK IS YOUR *quality guarantee*

● Hold one of your blank sheets of letterhead paper to the light. Now compare the information it reveals with that shown on the Fox River sheet as illustrated at the right.

● It's important that the watermark reveals these three qualities because the finest papers are made from cotton fibres . . . the more cotton fibres the finer the paper. Finally, it should reveal who makes it — like Fox River — makers of fine cotton fibre papers since 1883.

● Ask your printer, lithographer or engraver about Fox River papers. He'll be glad to recommend the paper with the correct cotton fibre content for each business need.

FOX RIVER PAPER CORPORATION
403-L S. Appleton St. • Appleton, Wisconsin

BE SURE IT SAYS 3 THINGS
1 Does It Contain Cotton Fibre?
2 How Much Cotton Fibre? 25%-50%-75%-100%
3 Who Made It?

100% COTTON FIBRE ANNIVERSARY BOND by FOX RIVER

Fox River Fine Papers

BOND, LEDGER AND ONION SKIN PAPERS

(*Continued from page* 296)

Manufacturing Company, Inc., of Hastings, Minnesota.

The reason for disposing of this division at this time, Bender states, was to secure additional factory space for the increased manufacture of Metal Office Furniture and to enable the GF National Sales Organization to more closely concentrate its efforts. GF, who is the largest manufacturer of metal office furniture in the world, believes this necessary because of the greatly expanding market which it faces now and in the future.

The Smead Manufacturing Company, Inc., of Hastings, Minnesota is at present a large manufacturer of filing supplies and related paper products. They have purchased a new plant at Logan, Ohio where they will manufacture and ship the same line of paper products now made by GF in Youngstown.

The transfer of finished inventory, raw material, and machinery from Youngstown to Logan is now under way.

MADE MANAGER OF EVERSHARP'S HEADQUARTERS PLANT

Appointment of George Schlatterer as manager of Eversharp's Headquarters plant, at 1800 West Roscoe Street, Chicago, is made by Alfred C. Howard, vice president in charge of manufacturing. He joined the company in March 1926, and was promoted from plant superintendent.

George Schlatterer

MOBILE DESKSIDE FILE AND UTILITY DESK

Three pieces of steel office equipment are announced by Oxford Filing Supply Company, Inc., Brooklyn, New York.

Two of these, the mobile deskside file and the Pendaflex utility desk, are new. The third, the Pendaflex desk data outfit, is a postwar returnee.

The mobile deskside file or Pendaflexer offers 24 inches of deskside filing space, a capacity that will hold up to 75 Pendaflex hanging folders. When the file isn't in use, the closed cover provides additional worktop space beside the desk, or it can easily be rolled aside.

The Pendaflex utility desk is an ingenious adaptation of the mobile file, which gives a work surface of 24 x 42 inches with the file closed and the drop-leaf table top up in place. This table is 28⅜" high — suitable for typewriting or

(*Continued on page* 300)

Swingline stapler...easy to load!

Anyway you look at it the Swingline Stapler is the leader, the only stapler with the wide open channel, free and clear for split-second loading. Troubleproof against faulty staple feeding. Easiest to operate. Press the latch underneath the base... the Swingline Stapler becomes a tacker. Push the anvil back, you have a Swingline pinner.

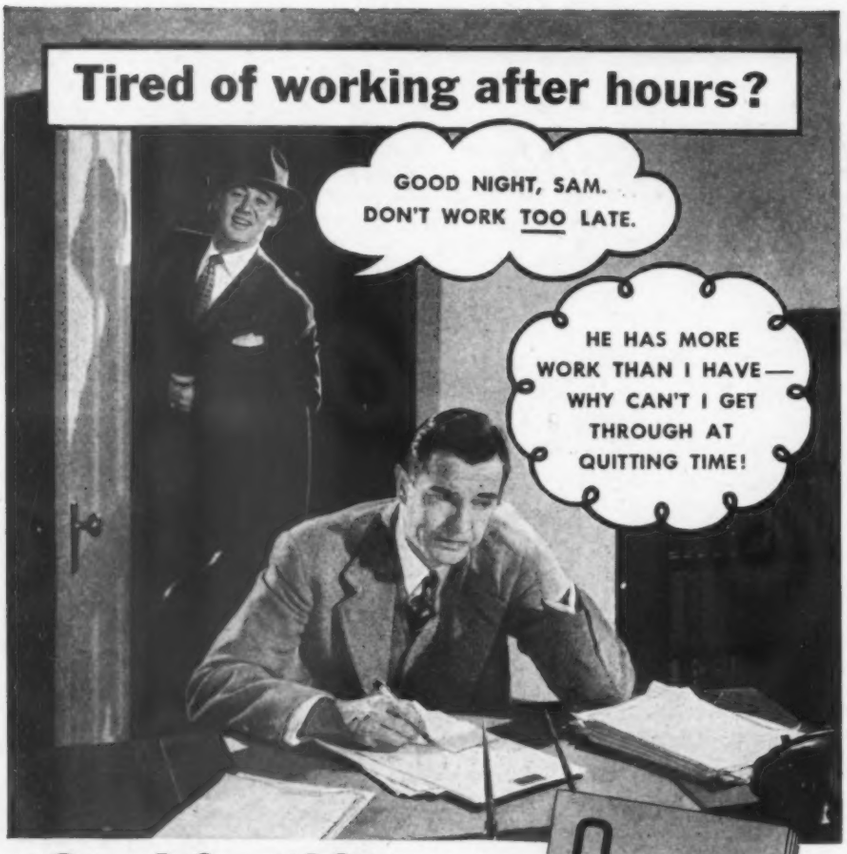
And what a difference Swingline's 100% Round Wire Staples make. Pre-tested for hardness and tensile strength, they assure greater penetration and prevent staple buckling. Precision engineered, they are 100% uniform and purposely round to eliminate excess glue, prevent clogging. Remember—SWINGLINE 100% Round Wire Staples fit all standard staplers.

All this adds up to the finest stapling combination you ever used. Make your office—home and school, Swinglined!

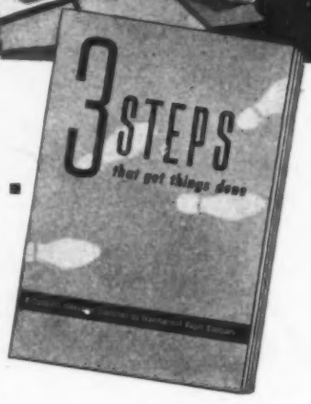
Swingline
STAPLERS STAPLES

100% ROUND WIRE Staples are best for all standard staplers

SPEED PRODUCTS COMPANY, INC. • LONG ISLAND CITY 1 • NEW YORK


Tired of working after hours?
GOOD NIGHT, SAM. DON'T WORK TOO LATE.
HE HAS MORE WORK THAN I HAVE— WHY CAN'T I GET THROUGH AT QUITTING TIME!

Send for this helpful book . . .

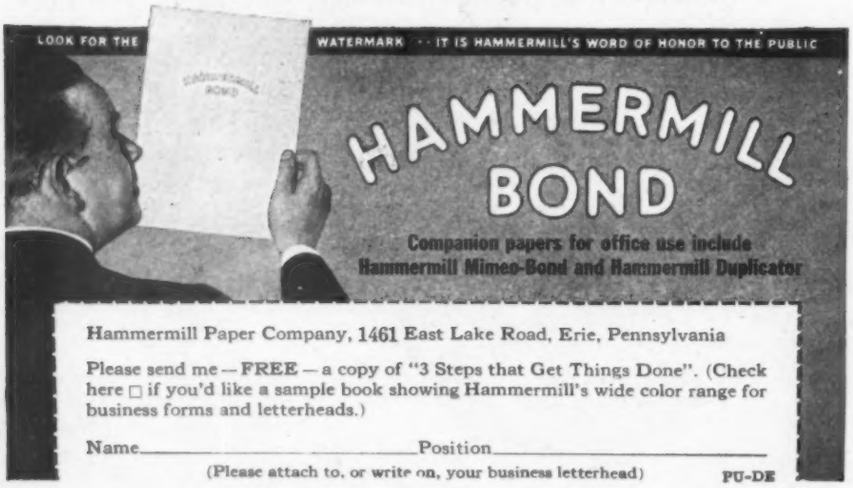


"3 Steps that Get Things Done" will help you organize your day, systemize time-wasting routine, free your mind for the executive tasks and decisions that are important, finish your work efficiently and on time.

This Hammermill idea-book shows how "putting it in writing" helps to plan jobs, assign them, follow them through, see that they're done right and fast. A compact, practical "show-how" book, it has helped thousands of busy men. Try its office-tested suggestions.

IT'S FREE!

And for your "plan-and-follow-up" forms rely on the paper made for business use—Hammermill Bond. Send the coupon below for a free sample book.


LOOK FOR THE WATERMARK · · IT IS HAMMERMILL'S WORD OF HONOR TO THE PUBLIC
HAMMERMILL BOND
Companion papers for office use include Hammermill Mimeo-Bond and Hammermill Duplicator

Hammermill Paper Company, 1461 East Lake Road, Erie, Pennsylvania

Please send me — FREE — a copy of "3 Steps that Get Things Done". (Check here ☐ if you'd like a sample book showing Hammermill's wide color range for business forms and letterheads.)

Name_____ Position_____

(Please attach to, or write on, your business letterhead) PU-DE

(*Continued from page* 298)

clerical work. It's plenty sturdy, too, having been subjected to 200-pound weight tests without a quiver.

When not in use the table top folds neatly in place at one side of the mobile file.

The mobile deskside file

The steel tray Pendaflex desk data outfit, which fits into the lower drawer of most standard desks, can be removed for use on top of the desk whenever desired. The outfit includes the steel tray

Pendaflex utility desk

and 25 Pendaflex folders complete with tabs and 100 headings. It is returning now after a long war-time absence.

All three of these pieces are finished in wear-resistant olive green enamel.

1 1 1

ADHESIVES PROVE STRONGER THAN METAL ITSELF

Fatigue tests given two pieces of 1/16-inch thick duraluminum cemented together with a new plastic adhesive have shown that the adhesive actually is stronger under bending stresses than is the metal itself. The tests were conducted by the Sonntag Scientific Corp., on a model SF-01-U universal fatigue testing machine as part of a series conducted for the American Society of Testing Materials. Fifteen specimens of the 24ST aluminum alloy were used in the tests. Repeated alternating loads up to five million load cycles were applied to the specimens and in all cases except one the adhesive held while the metal it-

(*Continued on page* 302)

Figure on *Greater Speed* with the UNDERWOOD SUNDSTRAND Adding Machine

MECHANICALLY FAST? Certainly. But in addition, the keyboard of this Sundstrand Adding-Figuring Machine is designed for extra-fast *fingering* speed.

Only 10 numerical keys . . . compactly arranged in natural sequence . . . all under the finger-tips of one hand. Even beginners develop high speed "touch method" operation after just a few hours' practice.

Operators can always keep their eyes on their work-sheets. No tiring "head swinging" to cause confusion . . . slow up results.

You'll find Underwood Sundstrand Adding-Figuring Machines especially suited to your particular business. They are made in different column capacities . . . narrow or wide carriages . . . with direct subtraction . . . credit balance . . . and many other special features.

Precision-built . . . these machines embody the quality and skilled workmanship gained from more than half a century of Underwood engineering and research.

Your local Underwood representative will be glad to give you a complete demonstration . . . *in your office*. For greater figuring speed, call him today.

UNDERWOOD CORPORATION
One Park Avenue • New York 16, N. Y.
Adding Machines . . . Typewriters . . . Accounting Machines . . . Carbon Paper . . . Ribbons and other Supplies
Underwood Limited, 135 Victoria St., Toronto 1, Canada
Sales and Service Everywhere

Underwood...*Speeds the World's Business*

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... for
HOME and OFFICE

Whatever one's envelope needs, Sheppard can supply them. From the stoutest manila folders business may demand, to the better stationery for social usage, Sheppard has envelopes for every purpose. The Shepco Flavor-Seal Envelopes with the delicious mint flavor are economical for business, and lend prestige. In social correspondence, they make writing a pleasure and mark the user as a person of discrimination.

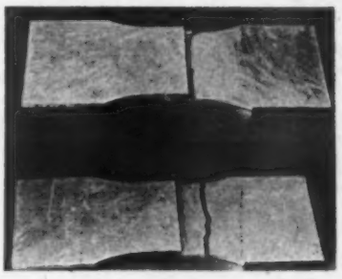
With this double appeal, wise suppliers meet both markets, increase their profits, and gain good will. Once customers have tried the "Taste Test" they are sold on Sheppard and demand these superior envelopes.

You can TASTE the difference!

Sheppard ENVELOPE CO.
Number 1 Envelope Terrace • Phone 2-4674
WORCESTER 4, MASSACHUSETTS

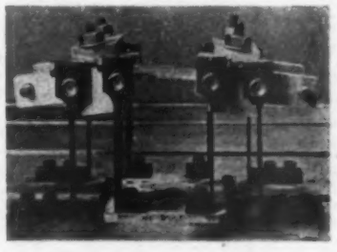
(*Continued from page* 300)

self fractured. Adhesives used were Cycleweld, product of the Chrysler Corp., and Redux, made by the Resinous Products and Chemical Co., of Philadelphia., both of which are said to be chemically very similar. The tests which simulated actual service, indicate that it may be



Duraluminum fractures while Adhesive holds.

possible to use the adhesive to glue metal aircraft parts together rather than rivet them. Such practices could mate-



Model SF-O1-U universal fatigue testing machine used in tests.

rially reduce the surface drag of airplane wings and fuselage. Further data is available from the Baldwin Locomotive Works, Philadelphia, 42, Pa.

NEW DRAFTING PENCIL

A new, aluminum drafting pencil, known as the Elastichuck Pencil, has been introduced by the Elastichuck Sales Company, Inglewood, California. The pencil features a rubber collet in the neck of the chuck which grips the lead and "cushions" it against undue pressure, thereby eliminating unnecessary lead-breakage. The rubber collet is the only contact between lead and pencil, and is a great improvement over conventional metal-type chucks that do not yield to extra pressures.

The hardened steel chuck cannot be damaged when sharpening leads against a file or sandpaper pad. The chuck is knurled for those who grip a pencil close to its point. The barrel is also knurled for normal grip and is tapered for perfect balance. Metal is highly polished, will not stain or rust. A roll-stop keeps pencil from rolling off inclined drawing boards.

Elastichuck Pencils use all standard drawing leads; an indexed tip identifies the lead in the pencil. Pencils are available either in single-end or double-end (as illustrated). Double-end pencils will accommodate two full-length leads and

are used where two kinds of leads or colors are necessary.

REPRODUCING MACHINE MAKES COPIES IN 25 SECONDS

"Ozalid Streamliner" is the name of new reproducing machine announced by Ozalid Division, General Aniline and Film Corp., Johnson City, N. Y., which

Demonstrating Ozalid Streamliner which produces copies in 25 seconds

manufacturer states machine reproduces anything drawn, typed, printed or photographed on translucent material, on sensitized paper, cloth, foil, film or plastic 65 times faster than conventional photographic reproductions, without requiring washing, drying or fixing. Process involves only two operations which are completed in 25 seconds: (1) exposure, where the original tracing and the desired type of sensitized material are placed together in the machine and subjected to an ultraviolet light; and (2) dry development, where the sensitized material is acted upon by controlled aqua ammonia vapors, developing the sensitized lines, imprinting them in blue, black, or sepia, depending on the material used. Machine reproduces standard

Traveling-office to be used for demonstration of Ozalid Streamliner

sized engineering drawings, accounting reports, file cards, photographic film positives and other translucent originals at an estimated cost of 1 cent per 8½ by 11 inch reproduction. The Streamliner unit is 62 inches wide, 50 inches high, 31 inches deep, and occupying 11 square feet of floor space. It accommodates material up to 42 inches wide with a printing speed of ten feet per minute. It will be demonstrated throughout the country in specially built automobile trailers fitted up as traveling offices and show-rooms.

(*Turn to page* 304)

Prominent Users of Strathmore Letterhead Papers: No. 68 of a Series

Does YOUR letterhead set the Pace . . . FOR THINGS TO COME?

Southern Pacific sets the pace in luxury sleeping-car travel with THE LARK . . . first train in America with a spacious three-car lounge and dining unit; first in the West with private room accommodations only. With overnight trips between San Francisco-Oakland and Los Angeles, THE LARK brings the latest in rail transportation to the West at regular Pullman fares.

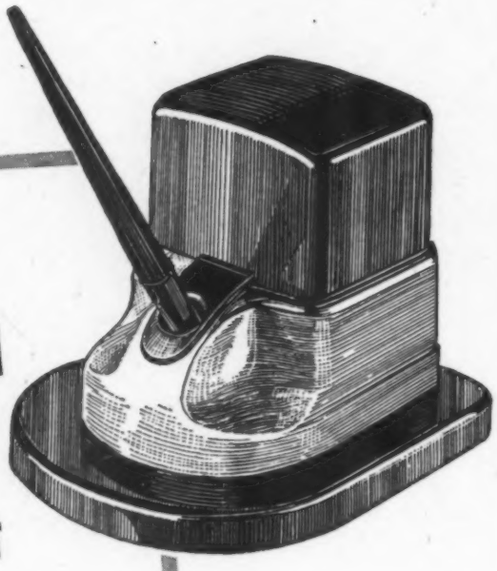
Completing the appointments of THE LARK is its own Strathmore paper letterhead, especially designed for passenger use. Your letterhead, too, is an important detail which interprets the pace of your company. To make sure, choose a Strathmore letterhead paper. The Strathmore watermark is your assurance of quality.

Strathmore Letterhead Papers: Strathmore Parchment, Strathmore Script, Thistlemark Bond, Alexandra Brilliant, Bay Path Bond, Strathmore Bond.

STRATHMORE *MAKERS OF FINE PAPERS*

Strathmore Paper Company, West Springfield, Massachusetts

Stylewriter



Carter's newest and finest writing set

THOROUGHLY MODERN—streamlined—beautiful. Seven radiant colors, styled to harmonize with the surroundings of the finest offices.

Mechanically perfect—the only set with the expansion chamber—an exclusive Carter feature which prevents overflow from internal air expansion and guards against spilling in case Stylewriter is upset accidentally.

Stylewriter comes complete with ink, and refilling with a standard Carter Cube takes only a few seconds.

Stylewriter is supplied in single and duplex models, complete with comb-feed pens that write a page or more with each dipping.

Ask Your Dealer for Quantity Prices

THE CARTER'S INK COMPANY

BOSTON, MASSACHUSETTS

REMINGTON-RAND INC. HOLDS OWN BUSINESS SHOW

Forty exhibit groups, representing the 40,000 Remington Rand Products, featured business show recently held on the street floor of the Remington Rand building at 315 Fourth Avenue, New York. The layout and motif of the show symbolized the modern trend toward use of metal, simplification of design, and noiseless efficiency. A new Gray-Rite color tone restrained the varied types of equipment, filing cabinets and furniture from

Visitors examine "The Chart that Thinks", a computing chart that automatically translates stock control or sales control figures into a graphic indication of action required.

dominating the floor, the exhibit being marked by the complete absence of wood. Among the exhibits of especial interest was the Vericon, a portable television unit which provides continuous visual supervision of hazard processes at a safe distance. Other products making their

Remington-Rand Portagraph, five-minute contact printer for photo-copying business records.

exhibition debuts included the keyboard margin control typewriter, multi-stage selector tabulator that prints one, two or three lines from one punched card, plastic-coated Procel stencils, the Gray-Rite metal office furniture, and several management controls such as Multi-Matic, Sched-U-Graph, Graph-A-Matic, and Suiyap.

1 1 1

DEAN MADE EVERSHARP GENERAL WORKS MANAGER

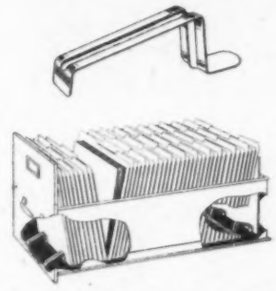
John W. Dean, Jr., manager of the Eversharp, Inc., plant at Long Island City, N. Y., has been promoted to general works manager of the company, it was announced by Alfred C. Howard, vice president in charge of manufacturing.

Dean joined Eversharp last July after 18 years with the Firestone Steel Products Company and the Firestone Aircraft Company, Akron, O., where he directed manufacture of automobile parts, subassemblies and fabricated C-46 aircraft units. He will make his headquarters in Chicago, and managers of the company's four plants will report to him.

Mr. Howard also announced the appointment of George Schlatterer, who has been connected with the manufacture of writing instruments for 21 years, as manager of the Roscoe Street Plant in Chicago. Schlatterer, who joined Eversharp in March, 1926, was promoted from plant superintendent and succeeds C. B. Moyd, who resigned.

NEW FILING AID

A small, inexpensive device for improving letter and document files is announced by Booth Industries, 1238-68 Third National Bldg., Dayton, Ohio. It

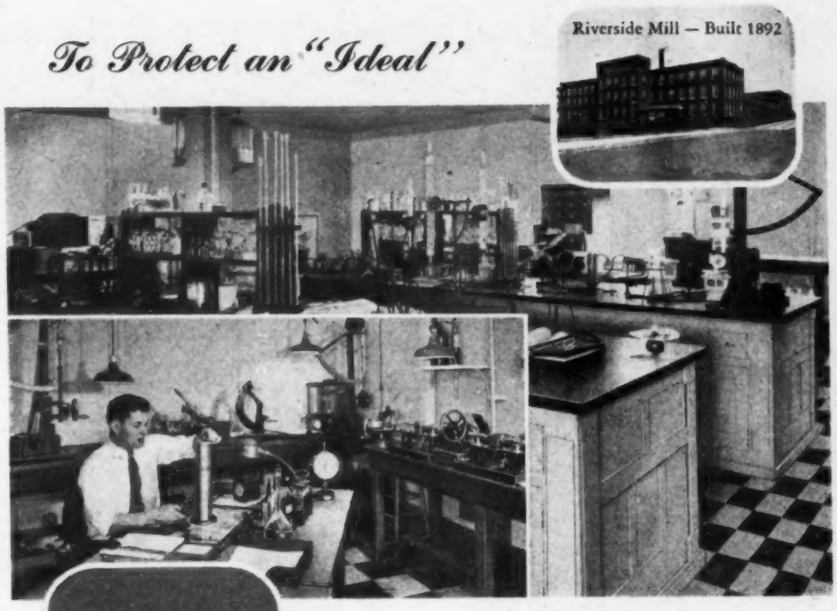


is called the File-Bloc. Two File-Blocs are placed in the front of the drawer and two ahead of the follower if it is vertical. The effect is to hold the guides and folders at an angle, thus causing the tops to fan like a book as shown in the diagram. Wherever the file is referred to, the place stays open. Since the contents are readily visible and accessible, material is quickly filed and found, which means a substantial saving of time and effort. The manufacturer states that the insertion of File-Blocs in a drawer takes only a minute or two. This being true, the sudden transformation is startling. File-Blocs are cadmium plated steel. They are packaged in one-dozen boxes and one-gross cartons.

AUTOMATIC MOISTENER

Illustration shows automatic moistener desk set, Model 6484, announced by the Hydrawlik Company, Roselle, N. J. The moistener is featured by a large capacity moistener and flexible plastic valve which controls flow of moisture into the sponge.

To Protect an "Ideal"



The above illustrations show sections of our extensive laboratories. Here, experienced technicians test raw materials, supervise paper qualities and maintain constant development research.

EAGLE-A PAPERS

This mark is your assurance of quality in paper.

in making Eagle-A Fine Papers

In 1892 Julius H. Appleton built the Eagle-A Riverside Mill with the craftsman's ideal of making the finest papers. He would have appreciated the benefits of our modern laboratory controls to further his ideal and the skill of his papermakers.

Today, our completely equipped central laboratory, supplemented by individual mill laboratories, tests raw materials, controls production quality and does research development. Thus, the highest standards and consistent qualities in Eagle-A Papers are protected.

EAGLE-A TROJAN BOND

laboratory controlled, is a 25% Cotton Content Paper that experienced buyers everywhere specify for letterheads and everyday business use.

Combining smart appearance with economy — Eagle-A Trojan Bond is a paper of proven performance, both on the presses and in the mails. A wide variety of sizes, weights, colors and finishes also contribute to its nation-wide acceptance.

Ask your Printer, Lithographer or Engraver to use Eagle-A Trojan Bond for your everyday office stationery.

Ask your Stationer for

EAGLE-A TYPEWRITER AND BOXED PAPERS

EAGLE-A PAPERS

AMERICAN WRITING PAPER CORPORATION • HOLYOKE MASSACHUSETTS

PERSONALITIES *in the* NEWS

Claude V. Lane has been appointed Manager of Purchase and Stores Department of Standard Oil Co., of Cali-

Claude V. Lane

fornia, with headquarters in San Francisco, succeeding Lyman Waters who has been granted an indefinite leave of absence due to ill health. Mr. Lane, a native Californian, joined Standard Oil in 1908 as an office boy in the purchasing department, and has worked exclusively in that department in Los Angeles and San Francisco, save for a period spent in Dallas with the California Company, a Standard subsidiary. A. R. Eimer, a graduate of the University of California, and with the company since 1922, succeeds him as Assistant Manager.

Charles D. Hoffmann has been appointed Purchasing Agent for the A. Leschen & Sons Rope Company, St. Louis, Mo.,

Charles D. Hoffmann

succeeding William Grossman, deceased. Mr. Hoffmann has been with the Leschen Company for 20 years and has served in both the engineering and sales departments.

Norman E. Elmore has become Purchasing Agent for the Veterans' Administration at Richmond, Va., Mr. Elmore served in the army for five years and was recently discharged with the rank of major.

Mark A. Swisher, Purchasing Agent for Moores & Ross division of the Borden Company, Columbus Ohio, has been elected a vice-admiral of the Christopher Club of the Columbus Chamber of Commerce.

J. A. Mac Tarnaghan has recently retired after many years as Purchasing Agent for Pope & Talbot, Inc., Portland, Oregon. Following his retirement came his resignation from Oregon Purchasing Agents Association of which he had long been a member, having served as association president from 1923 to 1933.

Benedict Van Voorhis, manager of procurement for the Du Pont Plastics Department, E. I. Du Pont de Nemours & Co., Wilmington, Del., has become

B. Van Voorhis

secretary and director of the Celastic Corporation, Arlington, N. J., a partly-owned Du Pont subsidiary, following the retirement of Roberts W. Brokaw. In addition to his new duties with The Celastic Corporation, Mr. Van Voorhis will continue as manager of procurement for the plastics department. He started in purchasing 31 years ago at the Leominster, Mass., plant of the plastics department, serving as purchasing agent there from 1925 to 1929. In 1931 he joined the Wilmington purchasing department in charge of purchasing for the plastics department. Mr. Van Voorhis is a former president of the Purchasing Agents Association of New York.

J. Ralph Walker, formerly Purchasing Agent for the Lake Success plant of the Sperry Gyroscope Co. (now used as headquarters of the United Nations) has been appointed General Purchasing Agent or Ranger Aircraft Engines, Farmingdale, Long Island, N. Y.

Willie Thomsen was recently appointed Assistant Purchasing Agent for the Dumore Company, Racine, Wisconsin. Mr.

Willie Thomsen

Thomsen has served Dumore for the past 5 years as Assistant Production Manager.

Clarence B. Townley, formerly Purchasing Agent for General Instrument Corporation, Elizabeth, N. J., has been appointed Director of Purchasing for that concern. Clyde Richardson succeeds Mr. Townley as Purchasing Agent.

Simon Askin has been appointed Director of Purchases, succeeding Robert P. Gould, retired, for the Heyden Chemical Corporation. He will have charge of all purchases, including raw materials and equipment. In addition to his duties as

Simon Askin

Director of Purchases, Askin is assistant secretary and assistant treasurer of the corporation, with headquarters at 393 Seventh Ave., New York City.

Richard R. Bastian, who recently resigned as Purchasing Agent for Owens-Corning Fiberglass Corp., Toledo, Ohio, has been appointed to the management group of Glass Fibers, Inc., of the same city.

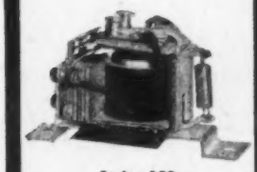
(*Continued on page* 308)

Relays BY GUARDIAN

FACTORY STANDARD WITH SPECIAL VARIATIONS

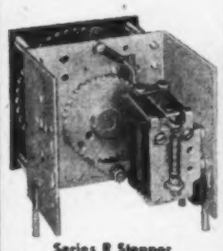
Series 500
Midget Relay

Use this relay where space, weight and maximum power delivery are primary factors. Sturdy. Offers many contact combinations. Maximum contact control capacity 8 amps. Fits in approximately 1½ cu. in. space.



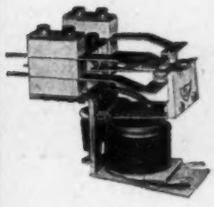
Series 150

Suitable where a small A.C. control relay is needed or if exposed to possible maladjustment. Equipped with "special" spring tension contacts which "make" before the armature fully completes its travel. Remaining armature movement is taken up by the contact coil spring insuring a firm, wiping contact.



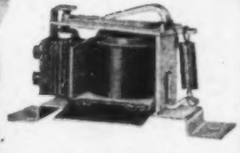
Series R Stepper

Three basic types for A.C. and D.C. operation: (1) Continuous rotation, (2) Electrical reset, (3) Add and subtract. For automatic circuit selection including automatic sequence; automatic wave changing on short wave transmitters; business machines; totalizers; conveyor controls, etc.



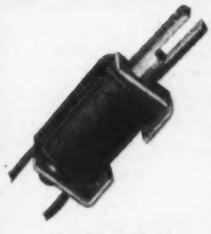
Series A-100
High Frequency

A1SiMag insulated, compact, low cost. For antenna changeover; break-in; hi-voltage keying; remote control of receiver and transmitter and other high frequency applications.



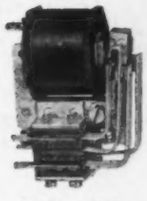
Series 120

A small, compact relay. An economical unit designed for control up to single pole double throw. Unique armature assembly prevents arcing. Low priced, yet high in quality and performance.



Series 1-A Solenoid

The series 1-A Solenoid by Guardian is one of numerous types for intermittent and continuous duty. Applications include valve control and operation; electrical locking; clutch and brake operation; material ejection; spray gun operation among others.



Series 40 A.C.
Laminated Relay

Designed to produce maximum output with minimum current input. Typical uses include control of call system bells; auxiliary for automatic radio tuning; remote control of fractional motors; safety devices; instruments; sound movie auxiliaries.

Guardian Switches

Switch assemblies by Guardian are unlimited, ranging from a single set of contact blades up to multiple stacks. The Guardian Featherub Switch shown is actuated mechanically. Operates on manual, roll-over or cam action. There are hundreds of others. Contact blades are obtainable in phosphor bronze, tinned to withstand salt spray test, or standard Guardian phosphor bronze.

Introducing a new product? Redesigning an established favorite? You may be thinking in terms of a "special" electrical control. Yet, a *basic* type Guardian Relay—Stepper—Contactor—Solenoid—or Switch Assembly (each adaptable to many variations) may meet your "special" control requirements with utmost efficiency. In such applications where *standard* Guardian units become "specials," the savings in time and money are substantial and you beat delivery schedules in the bargain. We urge you—study the *standard* Guardian units pictured and described above—there are many more fully illustrated in the Guardian Relay catalog giving complete operating details and variable contact data for each. Your copy is waiting. Write.

GUARDIAN ELECTRIC

1635-P W. WALNUT STREET CHICAGO 12, ILLINOIS

A COMPLETE LINE OF RELAYS SERVING AMERICAN INDUSTRY

Feller

J. C. Tuell has been appointed Purchasing Agent for Pocahontas Wholesale, Pocahontas Fuel Co., Inc., Pocahontas, Va., replacing E. V. Perry, who has resigned to become president and manager of the Norton Grocery Co., Norton, Va.,

Thomas A. Igoe has been appointed Director of Purchasing, Airline Foods Corporation, New York City. For the past

Thomas A. Igoe

ten years Mr. Igoe has been associated with New York office of the Independent Grocer Alliance, and served as manager of that office since 1943 until his resignation to join Airline Foods.

Howard A. Neubecker, Purchasing Agent for the Don F. Johnson & Co., Buffalo, N. Y., has taken over the business (a mill and industrial supply concern) in partnership with Walter E. Laney. Mr. Neubecker has been secretary and treasurer of his company for many years, and his new title is vice-president and treasurer. He is a member of the Purchasing Agents Association of Buffalo.

Pierre J. Brulte, of the traffic department of the Taylor-Reed Corp., New York, has been appointed Purchasing Agent of the company's Kokomo, Ind., plant.

J. Foster Price, Purchasing Agent at Collins & Aikman Corp., Bristol, R. I., and chairman of the Bristol Rotary Vocational Committee, recently addressed the club in conjunction with its program of having members speak on their respective trades and professions.

Charles L. Bopp has been appointed Purchasing Agent, and **William F. Lanier** Assistant Purchasing Agent, for Pendleton Manufacturing Company, La France, South Carolina, a division of La France Industries, Philadelphia, Pa. John P. Gambrell, former Purchasing Agent for Pendleton has resigned.

Wyman S. Randall, Purchasing Agent, Rust Craft Publishers, Boston, Mass., is conducting a class in Purchasing at Northeastern University School of Business. He also has a day course at the College of Business Administration, Boston University, for the fall and winter months. Correction is hereby made on spelling of Mr. Randall's first name, in October issue, and omission of name of B. U. department in which he is teaching.

Harold A. Manderson, formerly Director of Purchases, Continental Can Co., New York City, has been named Director of Purchases, White Motor Company, Cleveland, Ohio, succeeding John E. Dunbar. Mr. Manderson served on the War Production Board in 1941 and from 1942 to 1945 served in the U. S. Navy as special assistant, Bureau of Supplies and Accounts.

John Mazouch, Director of Purchasing for United Wallpaper, Inc., and its subsidiaries, Trimz Co., Inc., and Varlar, Inc., announces that the purchasing department heretofore located at the company's Chicago plant at 3330 West Fillmore Street, is now operating from the 22nd floor of the Merchandise Mart in that city.

E. J. Clark has been appointed Assistant Purchasing Agent for the Burlington Railroad Co., in Seattle. He started with the company as an office boy 33 years ago, and succeeds O. A. Schultz, deceased.

Sol Predeger has rejoined the purchasing division of Garod Radio Corp., Brooklyn, N. Y. His activities will include the purchase of components for the firm's radio, phonograph, and television products. He has been in purchasing in the radio industry for 18 years, five of which were spent with Garod. William B. Tolsch has also joined the Garod purchasing division.

J. W. Huffman, Richmond, Va., City Purchasing Agent has been reappointed to his present post for another 2 year term.

Rev. William F. Hogan, recently released from the Navy where he served as Naval Chaplain, has returned to his post as Assistant Treasurer and Purchasing Agent at Duquesne University, Pittsburgh, Pa., W. John Davis, Purchasing Agent during Father Hogan's absence has been appointed graduate manager of athletics.

Stanley Loos, Purchasing Agent of the Pure Oil Co., Chicago, Ill., has been elected vice-president of the Junior Association of Commerce, succeeding H. C. McConnell, who resigned because of ill health.

George R. Bosworth has been appointed City Purchasing Agent, New Orleans, La., succeeding David E. Verlander who had been serving on a temporary basis. City Commissioner L. G. Ott, commenting upon the appointment, stated that an analysis showed that the central purchasing department would save the city between $350,000 and $500,000 annually.

Thomas J. Harper, Purchasing Agent for the Stonewall Cotton Mills, Stonewall, Miss., was recently appointed honorary chief of police at a celebration commemorating his 50th year of service with the company.

H. J. Woehrman has been promoted from chief clerk and buyer to Assistant Purchasing Agent for the Shell Pipe Line Corporation, Houston, Texas, succeeding Earl H. Lindesmith, deceased. Mr. Woehrman joined the Shell organization 23 years ago as an office clerk. Frank H. Jones has been appointed chief clerk and buyer.

James F. Griffin has been named Purchasing Agent for the Oliver H. Van Horn Company, Houston, Texas. Mr. Griffin was recently released from the Army, where he served for three years, rising through the ranks to the grade of captain. Prior to his army service he was for three years Purchasing Agent in the Mid-Continent Division of Kobe, Inc., Oklahoma City.

Albert J. Browning, vice-president in charge of purchasing, Ford Motor Co., Dearborn, Mich., has announced the appointment of ***Victor G. Lottmann,*** of Chicago, as director of commodity research. Mr. Lottmann, manager of the firm of Booz, Allen & Hamilton, in Chicago, will conduct inventory and commodity studies for Ford.

Henry T. Coates, Purchasing Agent of the Dairymen's League Cooperative Assn., New York City, is conducting a course in purchasing at Rutgers University.

H. Woodrow Roberts has been named Manager of the Purchasing Department, Williamson Heater Company, Cincinnati,

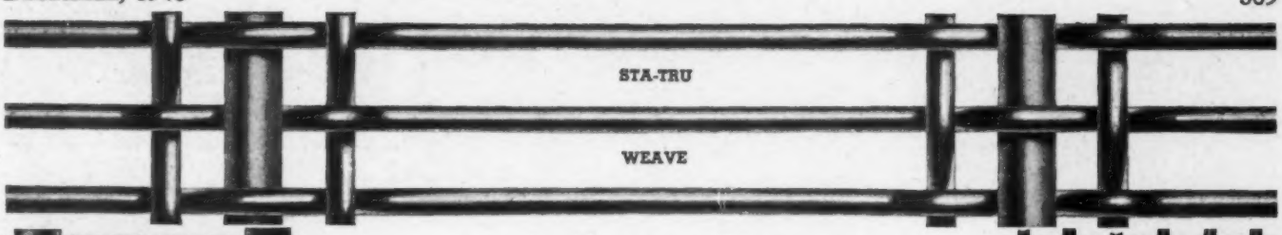
H. W. Roberts

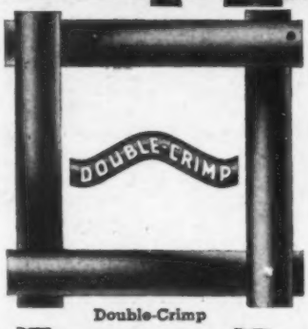
Ohio, succeeding W. O. Hall, deceased Mr. Roberts has been directing the operations of the purchasing department since the death of Mr. Hall, last June, and has been associated with the company since 1934 when he started as an office boy. He served in the mail order sales dept. as asst. manager, and later as manager. In 1943 he became manager of the Production Control Dept., and was transferred to the Purchasing Department in 1945. as Assistant Manager.

A. R. Brookbank, Manager of Equipment Purchases, the Kroger Company, Cincinnati, Ohio, has taken over the purchasing duties previously handled by Harry J. Gerver, deceased.

Frederick F. Kleinmann, Purchasing Agent of the Ward Baking Company, New York City, has been elected a vice-presi-

(*Continued on page* 310)

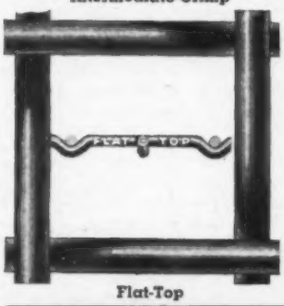




Double-Crimp

Arch-Crimp

Intermediate-Crimp



Flat-Top

SUPER-LOY LIVE-WIRE SCREEN-DECKS AND JACKETS

Engineered

to your exact requirements.

FOR SLAG SCREENS — STONE SCREENS — ORE SCREENS — GRAVEL SCREENS — SAND SCREENS — CLAY SCREENS — COAL SCREENS — COKE SCREENS —

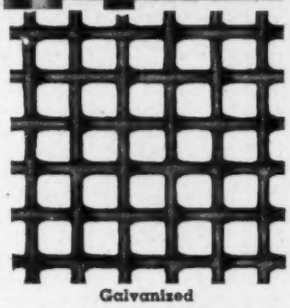
For lively, vibrant, rugged screen performance, have your SUPER-LOY Screen Decks and Jackets *ENGINEERED* in all details for each individual screening installation.

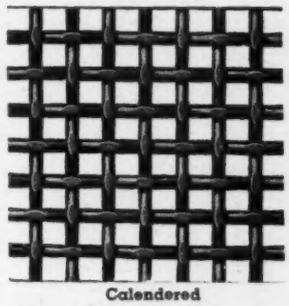
SUPER-LOY *Engineered Weaves* give you screen decks and jackets exactly suited to every unit in your screening layout. Permanent precision spacing of every wire assures continuous clean-cut, accurate, thorough separations.

SUPER-LOY *Engineered Content-Analyses* give LIVE-WIRE vim and endurance to every screening surface.

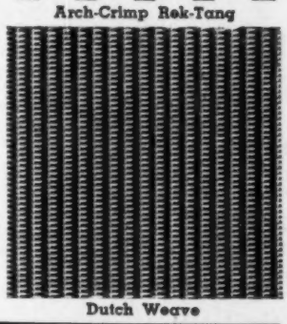
SUPER-LOY *Engineered Temper-Control* can give you super-hard wires for cylindrical jackets—super-tough wires for high-speed vibrators—super-strong wires for extra-heavy service.

SUPER-LOY *Engineered Stress-Control Crimping* preserves and improves the inherent qualities of every special SUPER-LOY analysis and temper.


Galvanized

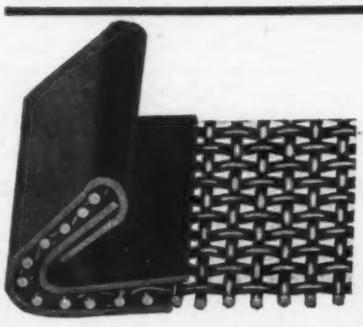

Calendered

Arch-Crimp Rek-Tang

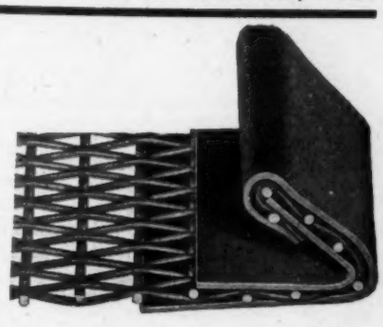

Dutch Weave

The LUDLOW-SAYLOR WIRE COMPANY

Newstead Avenue & Wabash Railroad **ST. LOUIS 10, MO.**



Order Ludlow-Saylor *Engineered* Hook-Strips for tensioning vibrator-screen decks. They transmit to every tensioned wire an equal share of uniform vibration, evenly distributed throughout the entire screen area. They make screen decks last longer—step-up screen capacities—are easier to handle—quicker to install—need fewer adjustments and renewals.



Present Day Practice in Belt Fastening

Every man who has anything to do with the purchase, application or maintenance of conveyor, transmission or V-belts will find the bulletins listed below of considerable value in connection with belt fastening work. A knowledge of present day practice in belt fastening helps reduce the loss in machine hours due to belt failures caused by the use of the wrong type of fastener or improper application. We shall be glad to send any or all of them to you or to any of the men in your organization.

For Conveyor Belts

FLEXCO HD Belt Fasteners are used to make a "water-tight" butt joint in conveyor belts ranging from ¼" to 1½" thick and of any width. The view on the right shows the various types of rips and patches that can be made with these fasteners and Flexco HD Rip Plates.

Bulletin F-100 gives complete details on how to fasten and repair conveyor belts.

For V-Belts

ALLIGATOR V-Belt Fasteners are now being widely used to fasten B, C and D, open-end V-belting of cross woven fabric core construction now being made by most belting manufacturers. The view at the left shows a typical application of these fasteners to a drive where endless V-belts would require dismantling the machinery to put the belts on the sheaves.

Bulletin V-205 gives complete instructions on how to use V-belt fasteners.

FLEX V Fasteners for A and B belts are also available for lighter duty V-belt drives. Ask for **Bulletin V-14.**

For Transmission Belts

ALLIGATOR Steel Belt Lacing is in world-wide use to make smooth, flexible joints in leather, rubber, balata, stitched canvas or solid woven belts up to ⅛" thick and as wide as they come.

Bulletin A-60 tells how to fasten and repair transmission belts.

Sold by Supply Houses Everywhere

FLEXIBLE STEEL LACING COMPANY
4697 Lexington Street, Chicago 44, Ill.

(*Continued from page* 308)

dent of the company. Mr. Kleinmann joined the company in 1911 as an office boy and has been Purchasing Agent for several years.

S. T. Keyes has been appointed Purchasing Agent of the Johns-Manville Products Corp., Waukegan, Ill., succeeding F. C. Boggess, deceased.

Enoch "Ted" Edwards has been appointed Purchasing Agent for Arnold, Hoffman & Co., Providence, R. I. Mr. Edwards recently returned to the company after three and a half years with the armed forces during which time he served with the 9th Air Force in Europe. Mr. J. B. Henriques, of the New York Office, will continue as Director of Purchases.

Otto Gloeckler is now Purchasing Agent for the Superior Foundry Company, Cleveland, Ohio, succeeding Morrell J. Stark, deceased.

Edward W. Hart succeeds Stanley Pierce as Purchasing Agent for the S. K. Wellman Company of Cleveland, Ohio. Previously he was sales and office manager.

Jack Miller has been named Purchasing Agent for the Radiart Corporation, Cleveland, Ohio, succeeding Merle Phelps, resigned.

Edward J. DeCrane has been named Purchasing Agent for the Master Products Company, Cleveland, Ohio.

Wilbur Frey succeeds Fred Moesser as Purchasing Agent for the Doehler-Jarvis Corporation, Toledo, Ohio.

A. L. Prentice has been appointed General Purchasing Agent for the New York Central System with headquarters in New York; P. T. Lynch has been named Assistant General Purchasing Agent. Mr. Prentice joined the company in 1914 in its engineering department.

William B. Joachim, Jr., has been appointed Assistant Purchasing Agent of the Lehigh and New England Railroad with headquarters in Philadelphia, Pa. He was formerly assistant to the purchasing agent, a position which has been abolished.

E. W. Peterson has been named Purchasing Agent of the Bangor & Aroostook Railroad, Bangor, Me. He succeeds Clinton D. Baldwin, who retired after 34 years with the railroad. Mr. Peterson entered the employ of the Bangor & Aroostook as general storekeeper in March 1920.

E. M. Laine has recently been appointed Manager of Purchase and Stores of Shields-Harper, Los Angeles. He started at Shields-Harper in 1932 as an accountant, going into Purchasing in 1936.

J. A. Gallant has been appointed Purchasing Agent for Timber Structures, Inc., succeeding John Holmes, who has resigned.

AMONG THE COMPANIES YOU BUY FROM

Birmingham, Ala. — Pittsburgh Lectrodryer Corp., of Pittsburgh, Pa., dehumidification equipment, announces the appointment of D. B. Gooch, as sales representative for the Carolinas and parts of Alabama and Georgia.

Indianapolis, Ind.—Lincoln Electric Co., of Cleveland, Ohio, electric arc welding equipment, has appointed R. W. Sharp as district manager and sales engineer of new office at 3343 Central Ave.

Chicago, Ill.—Edward F. and Edwin A. Stack, twins, represent two different

E. A. Stack E. F. Stack

companies in the plating industry in the Chicago area. Edward is technical sales representative for MacDermid, Inc., while Edwin has joined the Udylite Corp. Both are members of the American Society for Metals and the American Electroplaters Society.

Chicago—Ladish Drop Forge Company, of Cudahy, Wisc., has appointed W. O. Kupper as manager of middle western sales, with office at 332 South Michigan Ave.

Washington, D. C.—Timken Roller Bearing Co., of Canton, Ohio, announces appointment of Russell P. Proffitt as district manager at Washington.

Pennsylvania—Carboloy Company, Inc., announces appointment of Raub Supply Co., James and Mulberry Streets, Lancaster, Pa., as distributor of its carbide products. Office and salesrooms are in Lancaster with a branch office in Harrisburg, Pa., E. A. Swanson, manager of Raub's Industrial Supplies Division, will head the new carbide operation.

Canada—Sylvania Electric Products Inc., announces the appointment of Stromberg-Carlson Ltd., 211 Geary St., Toronto, as Canadian distributor for Sylvania Electronic products, including industrial electronic tubes, laboratory equipment, and industrial and electronic devices for communication applications.

Chicago—D. J. Murray Manufacturing Co. of Wausau, Wisc., announces the appointment of O. J. Malina, with offices at 43 East Ohio St., as sales manager of its heating and ventilating division.

(*Turn to page* 314)

"BUT WHAT'S YOUR LAST NAME?"

Our last name is *Koppers*. Many of you know our "children" by their "first names," but do you know their last name?

That is important to us, and it's important to you, too.

Many of you vouch for the extra service you get from Fast's Self-aligning Couplings or American Hammered Piston Rings, or White Tar insecticides or D-H-S-Bronze . . . and don't know that their last name is Koppers. If you know, you are probably disposed to put more than ordinary trust in other products made by Koppers.

Did you know that you can get a Koppers product for coating metal surfaces to prevent corrosion? A Koppers material that makes roofs last longer? Lumber that defies decay and termites? And many other products made with the same skill and originality and inventiveness as those?

So . . . look for this trade-mark which will soon be found on all Koppers products. Here it is.

K
KOPPERS

It is the mark of an organization which is engaged in many phases of engineering, construction, chemistry and coal carbonization . . . is in the forefront of new synthetic developments . . . is an important supplier to the pharmaceutical industry and to many other industries. For top value, look for this mark. Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pennsylvania.

THE INDUSTRY THAT SERVES ALL INDUSTRY

For Example, Pressure-treated Wood

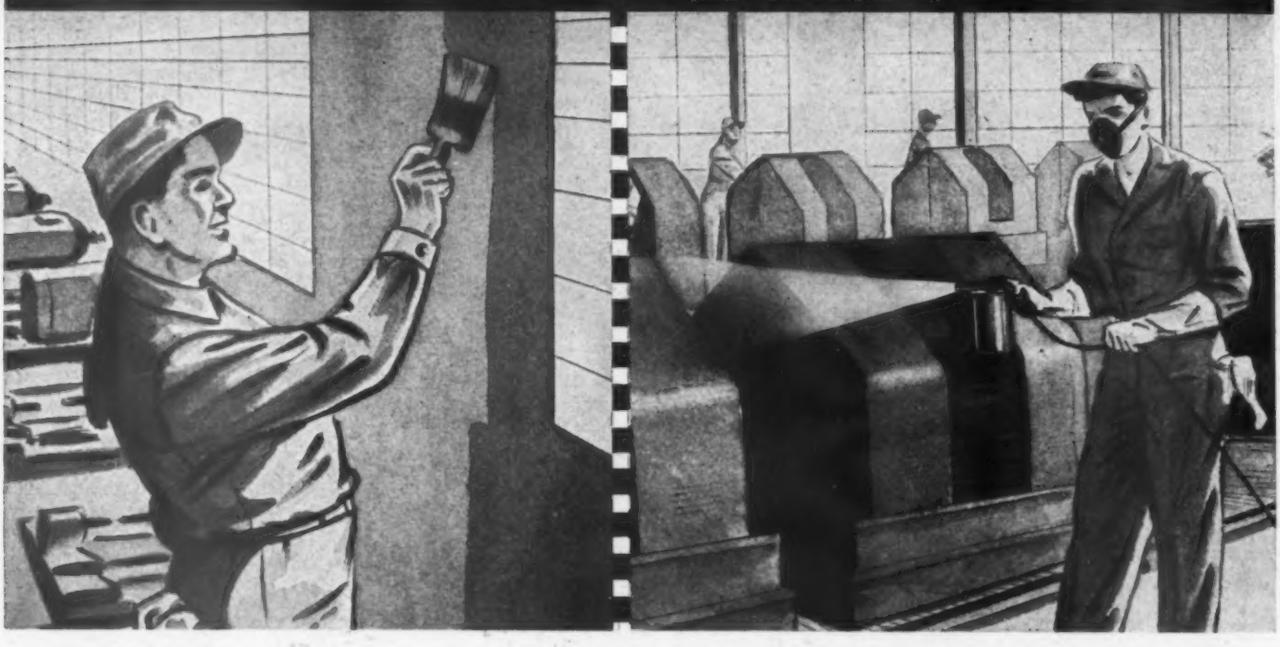
Timber has been called our greatest natural resource. One of the things which has done most to give it greater usefulness is "pressure treatment."

In such treatment, the pores of the wood are emptied of sap, then filled with creosote or other chemicals that enable wood to resist decay, termites and marine borers.

Pressure treatments make timber last much longer. They cut out the cost of the replacements that would otherwise have to be made. They save the labor costs of taking out and replacing old wood. They eliminate the necessity for painting or other maintenance expense.

Koppers builds the coke ovens in which creosote is recovered. It produces a great deal of creosote. It operates 21 plants throughout the country where creosote or other chemicals are forced into the wood.

GOVERNMENT OWNED **SURPLUS** PROPERTY



GENERAL MAINTENANCE AND INDUSTRIAL FINISHES

A PARTIAL LIST OF PRODUCTS

PAINTS: Ready Mixed — Semi-Paste —Oleoresinous—Water—Camouflage —Marine

ENAMELS: Synthetic — Oleoresinous (lustreless, semi-gloss, gloss)

LACQUERS: Pigmented — Clear — Camouflage (lustreless, semi-gloss, gloss)

UNDERCOATINGS & PRIMERS: Zinc Chromate—Red Oxide, etc.

LACQUER DOPES: Clear & Pigmented (cellulose acetate butyrate and cellulose nitrate types)

COLORED PIGMENTS (including iron oxide pigments)

COLORS IN OIL

WOOD FILLERS: Paste and Liquid

SHIP BOTTOM PAINTS: Anti-Fouling —Anti-Corrosive

Although this material has been previously offered to priority claimants, 10 per cent of the merchandise has been reserved to fulfill any further needs of priority claimants including VETERANS OF WORLD WAR II who are invited to contact the Regional Office serving their area.

Exporters are considered as wholesalers in the purchase of surplus property. Any question on export control should be referred to Office of International Trade, Department of Commerce, Washington, D.C.

available now

NEVER before has there been the opportunity to buy good quality general maintenance and industrial finishes . . . at such bargain prices. Included in this close-out sale of war surplus stocks are a wide range of specifications in gloss, semi-gloss and flat finishes, air-drying and baking enamels, paints, lacquers . . . in fact, practically every type of maintenance and industrial finish.

And they are easy to buy! Orders may be made up of one or more items. Containers usually range in size from one to fifty-five gallons.

Don't delay—*act at once.* Ask your nearest Regional Office of the War Assets Administration for prices, locations, quantities, types and colors today.

WAR ASSETS ADMINISTRATION

GOVERNMENT OWNED SURPLUS

Offices located at: Atlanta • Birmingham Boston • Charlotte • Chicago • Cincinnati Cleveland • Dallas • Denver • Detroit • Fort Douglas, Utah • Fort Worth • Helena • Houston Jacksonville • Kansas City, Mo. • Little Rock Los Angeles • Louisville • Minneapolis Nashville • New Orleans • New York Omaha • Philadelphia • Portland, Ore. Richmond • St. Louis • San Antonio San Francisco • Seattle • Spokane • Tulsa

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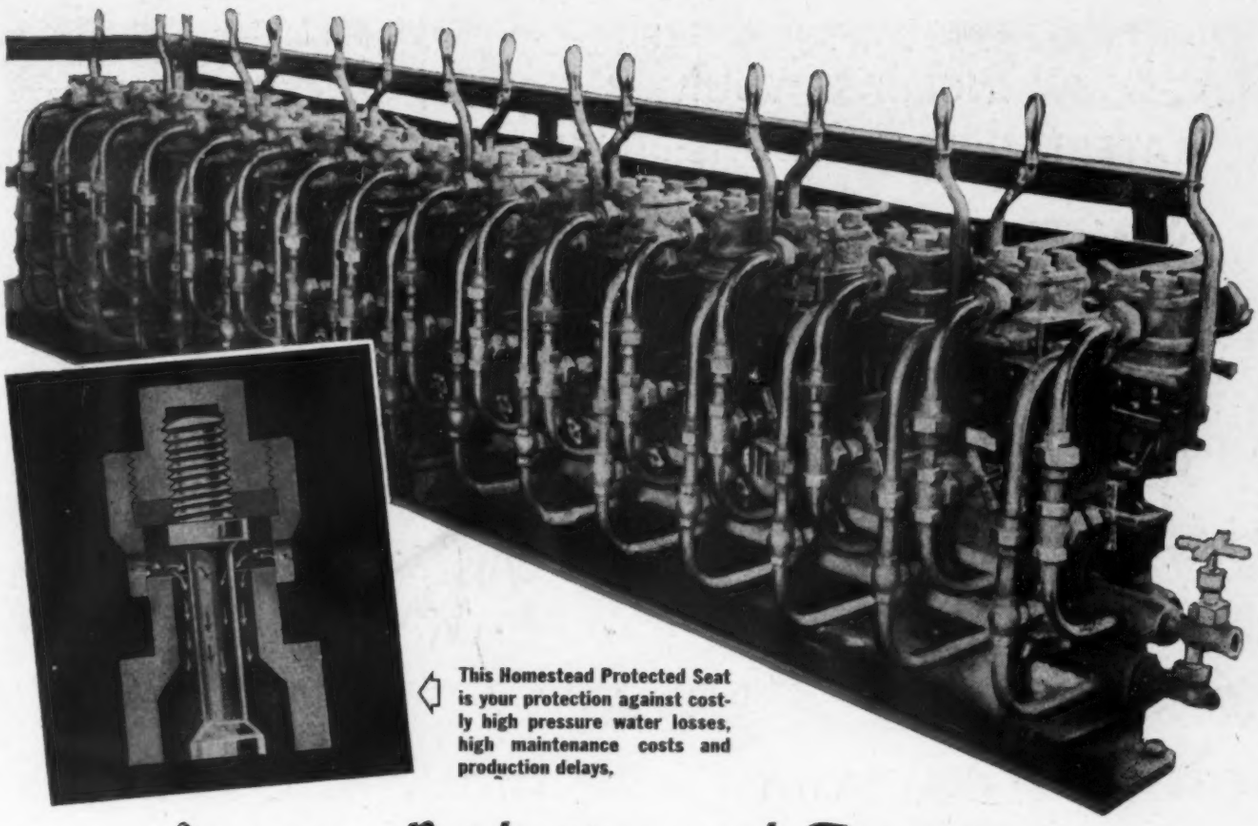


This Homestead Protected Seat is your protection against costly high pressure water losses, high maintenance costs and production delays.

Increase Production and Tonnage . . .
Reduce Shutdowns
with

HOMESTEAD

PROTECTED SEAT
HYDRAULIC OPERATING VALVES

Fast, easy, smooth, and "on the nose" control of manipulators, shears, stampers, presses, and other production machinery, is assured when operated by HOMESTEAD PROTECTED SEAT HYDRAULIC OPERATING VALVES. Built right into each valve is the HOMESTEAD PROTECTED SEAT consisting of a closely fitted sleeve and inside plunger, which reduce fluid flow to a dribble while seat and disc are still widely separated. "Wire drawing" or cutting of the seat, and leakage are eliminated. Production and tonnage are increased; and maintenance is so low that records of twelve to eighteen months continuous service without so much as the replacement of a fibre disc are common.

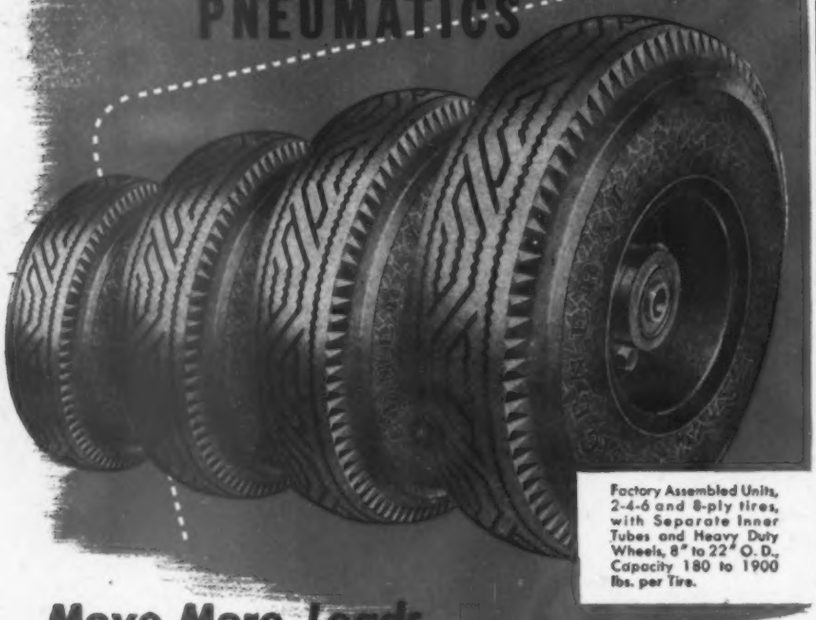
HOMESTEAD PROTECTED SEAT HYDRAULIC OPERATING VALVES are made in 3-way or 4-way types; or in single poppet types to control hydraulic spray for descaling; sizes $\frac{1}{2}$" to 4", hand operated or remote control, for pressures up to 3000 pounds.

Write today for complete details and copy of Valve Reference Book No. 38.

HOMESTEAD VALVE MFG. CO.

P. O. BOX 93 CORAOPOLIS, PENNSYLVANIA

INCREASE YOUR
MATERIAL HANDLING EFFICIENCY
with GENERAL INDUSTRIAL
PNEUMATICS



Factory Assembled Units, 2-4-6 and 8-ply tires, with Separate Inner Tubes and Heavy Duty Wheels, 8" to 22" O. D., Capacity 180 to 1900 lbs. per Tire.

Move More Loads,
FASTER, EASIER, SAFER

General Industrial Pneumatics cut material handling costs . . . move material faster, easier . . . cushion load and truck . . . end excessive floor wear . . . reduce maintenance. General Industrial Pneumatics provide:

A superior combination of rugged pneumatic tire with separate inner tube.

Heavy duty wheel in simplified sizes for interchangeability.

Easily demountable wide base rim to provide maximum load capacity and fast cushioned movement over any surface.

All units can be adapted to your present equipment. General Tire Engineers will work with you to determine the size and type of wheel unit best suited to your requirements.

The GENERAL TIRE

for information write
THE GENERAL TIRE & RUBBER COMPANY
Dept. 3 • AKRON, OHIO

INDUSTRIAL PNEUMATIC TIRE • TUBE • WHEEL UNITS

Kennametal, Inc., Latrobe, Pa., has appointed George E. Smith and Wendell E. Grubbs as representatives for its Philadelphia office at 3701 N. Broad St., E. J. Kelly for the Detroit office at 5531 Woodward Ave., and Max J. Caylor as Mining Representative for the Pennsylvania District.

Dallas, Texas—The Flexible Steel Lacing Co. of Chicago, fasteners and belt cutters, announces the appointment of

James Gillespie, 1330 Hollywood St., as sales representative for Texas, Oklahoma, Arkansas and Louisiana. Mr. Gillespie takes over the territory covered by his father, the late J. W. Gillespie.

Houston, Texas—Timken Roller Bearing Co., of Canton, Ohio, announces the appointment of H. B. Lilley district manager of the Timken Steel and Tube Division. His territory will include Texas, Louisiana, Arkansas, Oklahoma and Kansas.

Toronto, Canada—Snap-on Tools Corp., Kenosha, Wisconsin, announces the appointment of Arlington W. Clark, of To-

ronto, as general manager of Snap-on Tools of Canada Ltd. Prior to joining Snap-on, Mr. Clark served as managing director of Black & Decker Mfg. Co. Ltd.

New York—United States Rubber Co., Rockefeller Center, New York City. James E. Stevenson has been named manager of V-belt sales. Previously he was district sales manager of the L. H. Gilmer Co., a division of U. S. Rubber Co.

(*Turn to page* 316)

where **ENGINEERING** *meets* **EXPERIENCE** *halfway*

● The effects of dynamic and eccentric loading of springs; rubbing contact; buckling; small but unavoidable variations in wire and spring diameters—these and many other factors are often sufficient to upset all theoretical calculations in spring design. Satisfactory performance and long life, therefore, depend to a large extent on a rare combination of spring engineering and ripe experience in diagnosing and prescribing the remedies for spring troubles.

Successful spring designing consists of producing the simplest and least expensive springs which will do the work satisfactorily. That's why the highly specialized engineering and practical experience of the "Cleveland" organization is doubly valuable to manufacturers when designing new equipment or instruments. This service is yours for the asking, without cost or obligation.

Cleveland SPRINGS

CLEVELAND WIRE SPRING CO.

2012 West 25th Street, Cleveland 13, Ohio

Subsidiary of Reynolds Spring Company, Jackson, Mich.

What type of STAINLESS FASTENER do you need?

Prompt delivery from the largest stock in the nation!

Screws . . . nuts . . . washers . . . pins . . . Allmetal carries the largest stock in the country of stainless steel fasteners and screw machine parts. We also have facilities for heading, tapping, drilling, reaming, slotting, turning, stamping, broaching and centerless grinding . . . and we work not only with stainless and monel, but also with duralumin, aluminum, brass, bronze, or any other non-corrosive metal. All parts produced to close tolerances. Write for our catalog today. Allmetal Screw Products Co., 33 Greene St., New York.

Send for FREE CATALOG

This new, 83-page catalog helps you select the correct size and type of non-corrosive fastening device for any particular job. Includes stock sizes, specials that can be made, engineering data, etc. Make request on company letterhead.

ALLMETAL SCREW PRODUCTS CO.
33 Greene Street, New York 13

SPECIALISTS in STAINLESS FASTENERS

Indianapolis, Indiana—Okonite Company of Passaic, New Jersey, announces appointment of John L. Marsh in charge of industrial wire and cable sales in new office at 417 Merchants Bank Building.

Washington, D. C.—Koppers Company, Inc., of Pittsburgh, Pa., S. S. Bruce has been named to the position of executive sales representative.

Chicago — Sylvania Electric Products Inc., announces the appointment of W. C. Lounsbury, Jr., to the company's Light-

ing Division sales department. Mr. Lounsbury, formerly manager of the Lake Superior District Power Company's lighting department, will make his offices at 135 So. La Salle St.

Allentown, Pa.—Carboloy Company, Inc., of Detroit, cemented carbide tipped cutting tools, has appointed the Wm. H. Taylor & Co., Inc., 256 Hamilton Street, as authorized distributor. C. S. McEleya, sales manager, will head the Carboloy operation and C. R. Musselman will act as carbide specialist.

Pittsburgh, Pa.—Pittsburgh Division of Gulf Oil Corp., embracing Western Pennsylvania and West Virginia, announces the appointment of Homer A. Goddard as assistant division manager in charge of industrial lubrication. Mr. Goddard succeeds S. A. Newman who has been advanced to chief turbine lubrication engineer.

Detroit, Michigan — E. W. Bliss Co., mechanical and hydraulic presses, can and drum making machinery, rolling mill equipment, etc.: E. A. Irwin has been named general sales manager. Previously he was managing director of E. W. Bliss Company of Canada Ltd.

East Walpole, Mass.—Bird & Son, Inc.: Wesley C. Ahgren has been elected secretary-treasurer. Production and sales vice-presidential appointments include: H. Eugene Sawyer, Jr., in charge of flooring division, Eli L. Chamberlain, in charge of building material division, and Ralph A. Wilkins, in charge of paper products division.

Cincinnati, Ohio—Du Bois Co., has appointed John M. Welch as director of sales promotion.

Chicago—Great Lakes Supply Corp., distributors of industrial, railway, and contractors' supplies: Reed G. Landis has been appointed vice-president in charge of sales.

Philadelphia, Pa.—Metal and Thermit Corp., of New York City, has opened a sales office in the Land Title Building, Broad and Chestnut Sts. C. B. Cooper of the N. Y. Sales staff will be in charge.

Syracuse, N. Y.—Allis-Chalmers Manufacturing Co., of Milwaukee, Wis., announces the appointment of Ned Landis as branch manager.

Quincy, Illinois—Gardner Denver Company. G. V. Leece, vice-president and a director of the company has been named general sales manager.

Cleveland, Ohio—Hertner Electric Co., motor-generator battery-chargers, announces the appointment of Robert C. Neiswander as sales manager.

Detroit, Mich.—Industrial Radio Division of Philco Corp., A. J. Rosebraugh has been named sales manager in charge of all radio receiver sales to the automobile industry. He will be assisted by Martin F. Shea.

Connersville, Ind.—American Central Manufacturing Corp., announces appointment of Gene Henry as supervisor of production control; Kenneth Cook, assistant sales manager, and Larry Coen, distribution manager, both of the Product Division.

Pittsburgh, Pa.—Heppenstall Co., John P. Roche of Baldwin Highlands, Pa., has

been named vice-president and general manager of sales as well as a director of the company.

Torrington Company, Torrington, Conn., and South Bend, Ind., announces appointments of Frank H. Marchand a district manager, and Ray G. O'Connell and R. C. Recor, district engineers of the company's anti-friction bearing activities at Chicago. New district engineers: Torrington, Buell D. Dean; Cincinnati, Ohio, Fred J. Norman; and Los Angeles, Cal., Frank B. Tipton.

American Foundry Equipment Co., Mishawka, Ind., Ardee H. Freeman has been made special project engineer for the Milwaukee territory, and Edwin P. Clark has been assigned to Houston, Texas office.

Ask Yourself this Question:

COULD A *Special* FABRIC DO IT?

If you have any manufacturing or industrial problem that could or *might* be solved by a special fabric, the chances are we can make a cloth to meet your requirements.

Just tell us what you want the cloth to do. — Give us the specifications. What tensile strength (pounds per square inch) do you want? What tear strength (Elmendorf) should it have? What caliper (thousandths of an inch)? What stiffness (Gurley)? Do you want it waterproof? What temperatures must it withstand? How about solvents, acids and alkalis? What dielectric characteristics are necessary? These are the things we want to know.

By filling, impregnating or coating various fabrics (from sheer cambric to coarse burlap) with plastics, resins, starch and pyroxylin we can produce a cloth with almost any wanted properties. Write our Research Department today.

Cloth Bound

A cloth bound book is bound to be kept — bind your

CATALOG — SALES MANUAL — INSTRUCTION BOOK, ETC.

in HOLLISTON Book Cloth — durable, impressive, hard-to-soil, easy-to-clean.

Write for samples.

Consult your printer.

SPECIAL FINISH

HOLLISTON special finish cloths meet special needs —

TRACING CLOTH — PHOTO CLOTH — RUBBER (PROCESSING) CLOTH — BOOK CLOTH — SHADE CLOTH — SIGN CLOTH — TAG CLOTH.

Cloth combined with special compounds, filled, impregnated, coated — to form a material with characteristics of a plastic and the flexible strength of a woven fabric.

HOLLISTON
Special Purpose Fabrics

The Holliston Mills, Inc.

Norwood, Massachusetts

Ray M. Maloney describes manufacturing facilities of Corbin Screw Div. of the American Hardware Corp. to John M. Brown, Director of Purchases, Veeder-Root Inc., Hartford, Conn., at right.

Sub-Contract Sales Start and Finish with the P. A.!

"For a Purchasing Agent to seriously consider a sub-contract supply source he must know all about the prospective vendor's engineering, laboratory, production and management facilities. That's why," says Ray Maloney, "we always see to it that the P.A. is thoroughly familiar with every phase of Corbin Screw facilities. It is the Purchasing Agent who selects the most desirable vendor on the strength of service, not on quoted price alone, and finally signs the contract."

Whether it is facilities or finished products you want to sell, the man who will decide *for* or *against* you is the P.A. Your salesmen know it . . . their call reports prove it!

To harness your 1947 advertising to sales work, see that *Purchasing* is at the top of your media list. It's the one magazine you can rely on for cultivating Purchasing Agents . . . it's the Purchasing Agent's own magazine.

For latest data, write PURCHASING, 205 East 42nd St., New York 17; 333 No. Michigan Ave., Chicago 1; Leader Bldg., Cleveland 14; Forrest C. Pearson, Pacific Manager, 448 South Hill St., Los Angeles 13.

PURCHASING

ABC ABP

A CONOVER-MAST PUBLICATION

THE NATIONAL MAGAZINE FOR PURCHASING EXECUTIVES

WE'RE TALKING ABOUT YOU

to 40,000 Sales Executives . . .

. . . and we're going to keep on telling them how the *modern* P. A. operates until every last misconception about today's purchasing methods has been wiped out.

When the able sales engineer and the modern purchasing agent get together, business is transacted intelligently and quickly and with a minimum of lost motion. Your business is buying . . . his is selling. You know what you want . . . he knows what he can offer. Obviously a lot of time can be saved when every Sales Manager is made to realize what a vital function today's Purchasing Agent performs in the buying of practically every kind of equipment.

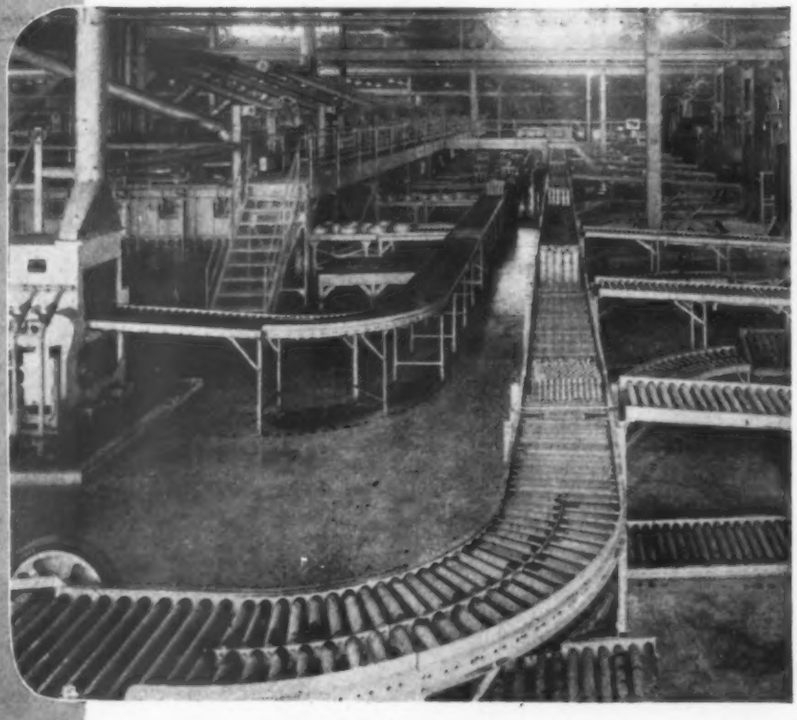
And your magazine has resolved to keep on driving this truism home until this great educational job is complete.

Mathews Offers You...

Complete CONVEYER SERVICE

PROBABLY one of the most distinct advantages that Mathews makes available to industry today is a conveying service that is complete. Proposal engineering, estimating, detail engineering, fabrication, and erection in the field, all are part of this thoroughly organized effort. A competent field engineering staff, an experienced engineering force at the plants, modern factories and highly skilled personnel make this complete service possible. Plant engineers have learned that this complete service can make the material handling phase of their job easier, and help them to do it better.

When you need conveying equipment, remember that Mathews complete service can be yours for the asking, without obligation. Whether your problem requires gravity or power conveyers, or special conveying machinery, you will find Mathews Engineers in a position to help you make the most practical application.



MATHEWS CONVEYER COMPANY
ELLWOOD CITY, PENNSYLVANIA
SAN FRANCISCO, CAL. • PORT HOPE, ONT.
ENGINEERING OFFICES IN PRINCIPAL CITIES

Watch Your Inventories!

(*Continued from page 92*)

production in spite of shortages and bottlenecks, while at the same time to so control the inventory aggregate and outstanding commitments as to avoid being caught with excessive or high-priced stocks in the face of a lowering of total demand which appears certain to occur.

For the past several years buyers have taken almost anything offered irrespective of price. An eager and ready market for products was assured in government purchases during the war and in the pent-up buying of civilians after the war. In the future, however, a wary eye must be cocked on the trends of sales, already high, and the possible customer resistance to high prices.

The purchasing agent has the opportunity of becoming a key factor in tempering the reaction which is to be expected; on the other hand, injudicious buying could easily make him the "fall guy" in the resulting inventory losses. As was pointed out by Mr. Smalley in the "The Sellers' Market" in the October issue of PURCHASING, a buyers' market has its own brand of difficulties—there may be "plenty of everything except employment and money."

In the present period of rapidly rising inventories, therefore, it becomes important for the future to avoid unnecessary accumulations. The situation suggests frequent reappraisal of the detailed inventory position, including orders, a weighing of sales anticipations and of pricing policies. To the extent that a boom can be averted, the subsequent readjustment will be moderated, with a smaller impact on business.

* * *

From One P.A. to Another

(*Continued from page 135*)

hump. I feel fairly certain ordinary cotton textiles are going to be over the hump in the next few months. But with those things happening, I don't believe that the bottom is going to drop out for some time at least, because labor costs and taxes are not going to disappear, and our farm products are guaranteed parity prices for two years after the war.

We have been living with controls, subsidies and loans so long that a great many have come to depend on it. They are going to have to toughen up. Purchasing is now a logistics problem, to secure the

(*Continued on page 322*)

Photograph, courtesy of Elwell-Parker Company

Palletizing Changes Square Feet to Cubic Feet!

Practically any company can save time and labor by using pallets, because they turn square feet into cubic feet when moving or storing products. Merchandise can be stacked to the roof if necessary, quickly, economically and safely.

To prepare products for palletizing, use Stanley Steel Strapping. Stanley Strapping not only securely binds merchandise, but does it economically. Palletized material can be loaded or unloaded from trucks or freight cars by one operator in a fraction of the time formerly taken by two or more men. The Stanley System includes tools and accessories. The Stanley Works, Steel Strapping Division, New Britain, Conn.

With Palletizing You:

. . . SAVE SPACE

. . . CUT HANDLING

. . . SAFEGUARD MATERIALS

. . . REDUCE ACCIDENTS

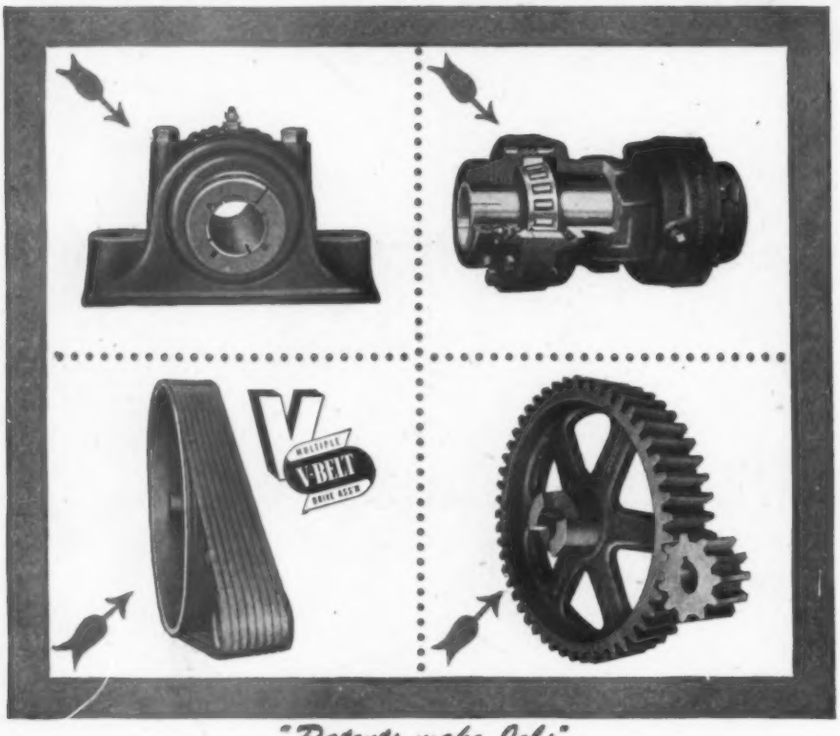
STANLEY

STEEL STRAPPING AND CAR BANDING SYSTEMS

ONLY TAKES ONE!

COMPLETE POWER TRANSMISSION EQUIPMENT FROM ONE SOURCE SCORES *High* . . . . IN EFFICIENCY!

Let Medart's 60 years' engineering experience help you on your transmission problems. Recommendations are unbiased because Medart engineers can choose from the entire field of power transmission equipment.



"Patents make Jobs"

- Shaft Hangers
- Bicycle Type Sheaves
- V-Belt Drives
- Cast Iron Pulleys
- Steel Rim Pulleys
- Ring Oiling Bearings
- Wick Oiling Bearings
- Belt Tighteners
- Chain Drives
- Set Collars
- Hercules Pulleys
- Wood Pulleys
- Shafting
- Friction Clutches
- Sprockets
- Pattern Work
- Rigid Shaft Couplings
- Flexible Shaft Couplings
- Universal Shaft Couplings
- Medart-Timken-Bearings
- Iron & Semi-Steel Castings
- Wire Rope Sheaves
- Cut Tooth Gearing
- Molded Tooth Gearing

MANUFACTURING ENGINEERS OF COMPLETE TRANSMISSION EQUIPMENT AND SPECIALIZED MACHINERY

MEDART

THE MEDART COMPANY - 3500 DEKALB ST., ST. LOUIS, MO

From One P.A. to Another

(*Continued from page* 320)

materials needed for operations rather than speculating on inventories. The chances are we will not have the wide swings in prices we formerly had. Too much of our costs are in high labor rates, high taxes. They are going to be more fixed and rigid than they were. Our newer and younger men in purchasing must be aware of that trend. They must realize the cost of carrying speculative inventories is nearly always prohibitive. I don't know of any expert accountant that figures you can carry inventory very long for the 10% saving you may secure on a price.

My advice is to watch the Escalator Clauses closer than ever; begin to pay a little attention to cancellation clauses too.

Watch these extended deliveries, particularly for quality and substitution. It should not be long before our quality should be climbing up. And begin edging your buying procedures and policies over towards sound fundamentals. That's where the better values will be found.

Sure there will be some shakeout and shakedown in business, and I believe purchasing agents have an important responsibility to bring business back into normal channels and to eliminate the gyps and substandard materials and off-standard practices that have crept into our business during the past few years.

I believe that will leave good companies with good business and good business prospects for some time to come, and I believe their securities will probably be worth more too in a very short time.

* * *

District Activities Program

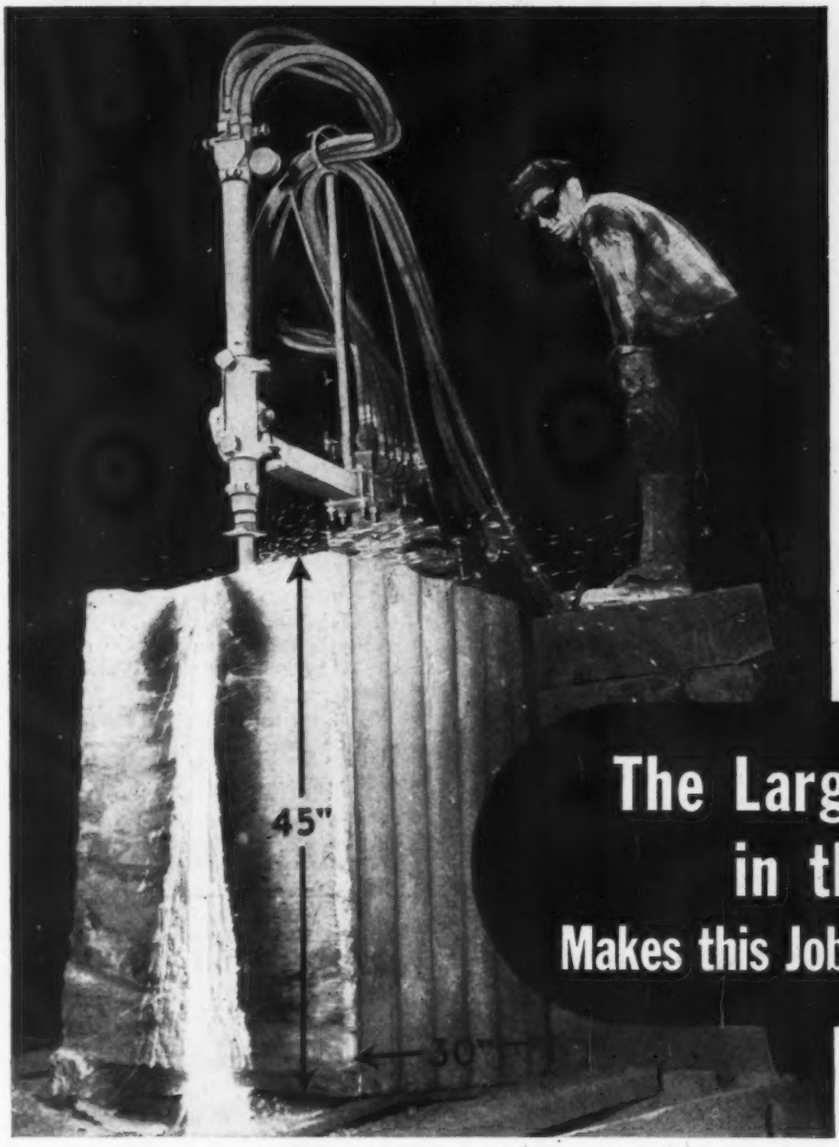
(*Continued from page* 121)

other sections of these United States. You can go back to your places of business knowing that you have received both tangible and intangible benefits, the value of which far exceeds any dollar measure you may attempt to make.

Today, your District Activities Committee meets again in regular session to consider plans for further activities of interest and value to Southeastern Purchasing Agents.

We hope to plan and recommend a procedure through which we may be able to convince the proper educational authorities to include ap-

(*Continued on page* 324)



The Largest Blowpipe in the World Makes this Job as Easy as it Looks

It takes just **15 minutes** to slice through an ingot of this size. For eight hours a day, five days a week, this giant OXWELD C-45 oxy-acetylene blowpipe and another just like it are in operation at this mill slitting ingots for scrap.

IF YOU CAN USE A RAPID METAL-CUTTING METHOD...

If a fast, economical method for cutting heavy ingots, risers, or forgings, will increase efficiency of operations in your plant, get in touch with the nearest Linde representative. He will help you to determine if your job can be done better by methods developed by The Linde Air Products Company.

THE LINDE AIR PRODUCTS COMPANY

Unit of Union Carbide and Carbon Corporation

30 E. 42nd St., New York 17, N. Y. UCC **Offices in Other Principal Cities**

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LINDE OXYGEN

PREST-O-LITE ACETYLENE

UNION CARBIDE

OXWELD, PUROX, PREST-O-WELD, UNIONMELT APPARATUS

OXWELD AND UNIONMELT SUPPLIES

The words "Linde," "Oxweld," "Prest-O-Lite," "Prest-O-Weld," "Purox," "Union," and "Unionmelt" are trade-marks of Union Carbide and Carbon Corporation or its Units.

PLATE AND
SHEET STEEL
PRODUCTS
If it's a base, guard, or special metal part for a new machine or to replace a worn out unit, Littleford is equipped to make the most intricate of fabricated steel products. Whether it's to be made from plain steel or alloy metals it can be formed and welded to the exact detail. It's no problem to get special fabricated metal parts; let Littleford be your source of supply, even if it's for one unit or many — send blueprints for estimate of cost.
LITTLEFORD
LITTLEFORD BROS., INC.
446 E. Pearl St., Cincinnati 2, Ohio

District Activities' Program

(*Continued from page 322*)

proved courses in purchasing in the curricula of our leading Southern universities.

Also under study is a project for compiling various Southeastern States manufacturing registers in one binder for distribution to purchasing men in the Associations of District No. 7. We are sure there are thousands of products made here in the Southeast whose sources of supply are not known by the purchasing agents of this area.

Certainly, definite recommendations will be presented to our District Council for another finer and greater conference—possibly to include some type of informative products exhibit, with special encouragement to be given to Southeastern manufacturers.

All in all, your District Activities Committee is busily following its original directive in attempting to provide those projects and activities which will result in the improvement and advancement of the purchasing profession in the Southeast —to make our members more fit for influential leadership in executive councils on a national scale, and at the same time, through the resulting efficiency of their procurement practices, lift the economic position of the Southeast in the nation. Suggestions for programs looking to this end are both invited and welcome.

* * *

Contract Simplification

(*Continued from page 137*)

delays comes up in the standard contract for supplies—Form No. 32, commonly known as the long form. The present stipulation is that if the contractor refuses or fails to make deliveries of the materials or supplies within the period called for in the contract, the Government can terminate and buy on the open market, holding the original contractor liable for any cost to the Government in excess of the amount called for in the original contract.

The exception is where unforeseeable contingencies arise, which are beyond the control of the contractor.

Another problem which will be reviewed is the present practice governing disputes arising between the contractor and the purchaser. The practice now is for all disputes concerning questions of fact arising under the contract to be decided by

(*Continued on page 326*)

BEALL
Spring WASHERS
Bolted assemblies
stay TIGHT permanently
BEALL SPRING WASHERS, with live, long-range action compensate for ALL causes of looseness including vibration, bolt stretch, wear, rust and break-down of finish under the nut and bolt head.
IN STOCK in all Standard Sizes; made of Carbon Steel, Stainless Steel, Everdur and Duronze.
BEALL TOOL DIVISION (HUBBARD & CO.)
160 Shamrock St. EAST ALTON, ILL.

KENNAMETAL
CEMENTED CARBIDE
TOOLS, BLANKS, and SPECIALTIES
- FOR FAST, ACCURATE METAL-CUTTING . . . complete selection of single-point tools and milling cutters.
- RESIDENT TOOL ENGINEERS in 24 cities available for expert help in proper selection and correct use.
- WAREHOUSES in Chicago, Cincinnati, Los Angeles, New York, and San Francisco to expedite delivery.

KENNAMETAL
SUPERIOR CEMENTED CARBIDES
KENNAMETAL Inc., LATROBE, PA.

L-O-N-G ON LINE···
L-O-N-G ON LIFE

To get the *right* valve for your particular installation, take your pick from OIC's *l-o-n-g* line. It includes bronze, iron and steel valves in a wide variety of trims. Sizes, types and pressure classes are available to fit most services.

To get *long life* from the valves you buy, pick the ones with the OIC trademark. That symbol means heavy construction . . . extra "beef" at vital points such as body walls, heavily-ribbed yoke arms, full-threaded bonnet bolt studs and sturdy I-beam wedges. It means quality materials and precision manufacture that assure you an extra margin of safety . . . with a smaller amount of maintenance. You can *trust* the products of OIC — pace-setter in valves!

WE'LL BE GLAD TO SEE YOU AT OUR EXHIBIT AT NEW YORK POWER SHOW, BOOTH 58

OIC

SETS THE PACE IN VALVES

OIC VALVES
Steel Iron Bronze

Distributors In Principal Cities

248 PAGES OF VALVE DATA
Now coming off the press, this useful new OIC catalog is crammed with facts and specifications on steel, iron and bronze valves. Demand is already large, so mail the coupon to *reserve your copy NOW!*

MAIL THIS RESERVATION TODAY!

Ohio Injector Company—Wadsworth, Ohio

Please save me a copy of the new OIC valve catalog and data book.

Name_____ Position_____

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City_____ Zone____ State_____

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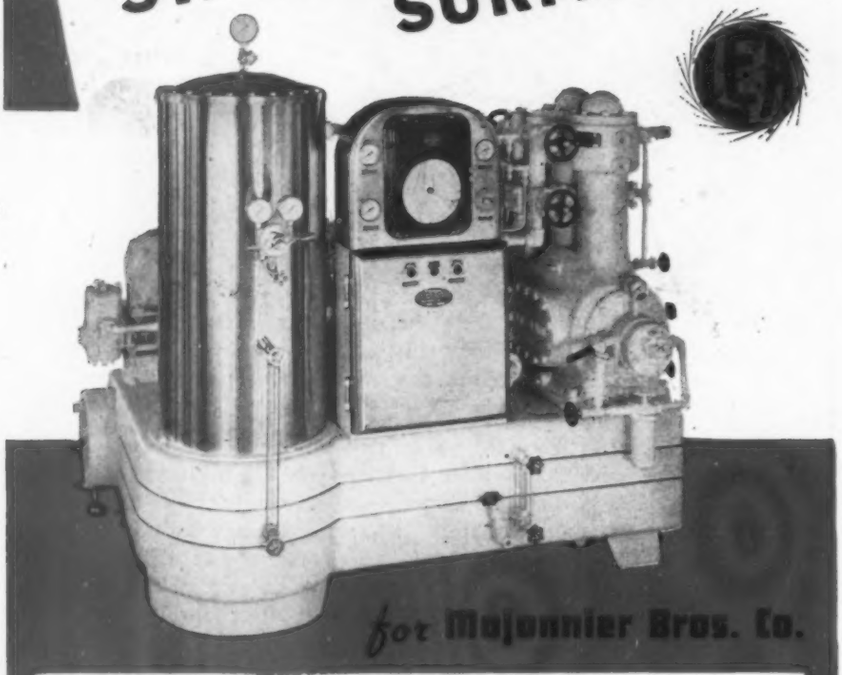
LEA METHOD
LEA COMPOUND
Finish MOST exterior STAINLESS STEEL SURFACES



for Mojonnier Bros. Co.

Mojonnier Bros. Co., of Chicago, manufacturers of "America's No. 1 Line of Stainless Steel Food Processing Equipment", of which the CARBO-COOLER illustrated here is an excellent example, find in a LEA Method and a LEA Compound the answer to a stainless steel finishing problem.

Most exterior and many interior stainless steel surfaces of this company's equipment are finished with LEA Compositions—producing the gleaming trim which means cleanliness, a "must" in any food processing equipment.

If your plant has a metal finishing problem, why not submit it to LEA FINISHING ENGINEERS—we can cut production time, cut costs and improve the quality of the finishing in your plant. LEA Methods and LEA Compositions are outstandingly successful in polishing, buffing or burring metals, plastics and wood.

THE LEA MANUFACTURING CO.

Burring, Buffing and Polishing . . . Manufacturers and Specialists in the Development of Production Methods and Compositions

16 CHERRY AVENUE • WATERBURY 86 • CONNECTICUT

Contract Simplification

(*Continued from page* 324)

the contracting Government officer, giving the contractor a period of 30 days to appeal his decision to the head of the department concerned. Consideration is being given for liberalizing this procedure in favor of the contractor.

Likewise under study is Standard Form No. 33 (short form contract), which is an invitation, bid and acceptance form all in one.

The present terms of this abbreviated form show how in the past the Government eliminated a specific risk to the contractor without any loss to itself. One of the conditions of the contract is that if any Federal tax becomes effective after the bid is opened, the Government will assume the full amount of such tax.

This removes a specific hazard to the contractor, and the Government is merely dipping its hand in one of its own pockets and depositing the pickings in the Government coffers.

The P.A. and Public Relations

(*Continued from page* 124)

of course, the responsibility of the manufacturer to furnish purchasing agents information about items produced locally, and if manufacturers would do this their sales would no doubt be increased.

Because of constant contact with suppliers of materials, purchasing agents frequently know of improvements in design, or of new products or of better products before other departments of their companies, and so have a unique opportunity to keep those departments informed.

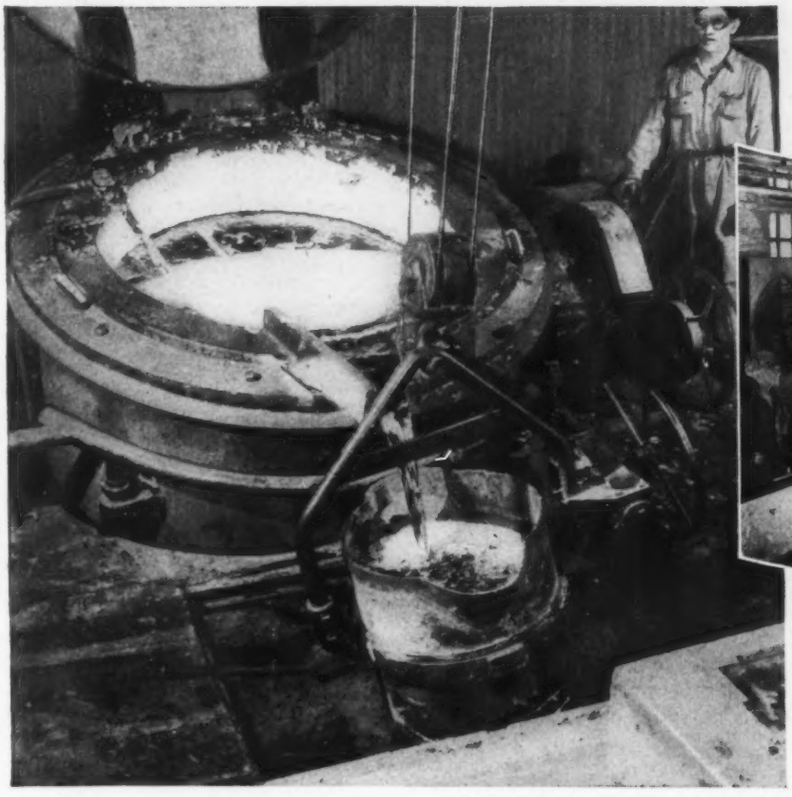
In addition, purchasing agents can be extremely helpful with suggestions to suppliers for improvements in the products purchased, for manufacture at lower cost, for more attractive packaging or finish, for additional uses to which the products might be put, and for the opportunity through research to develop new and better products.

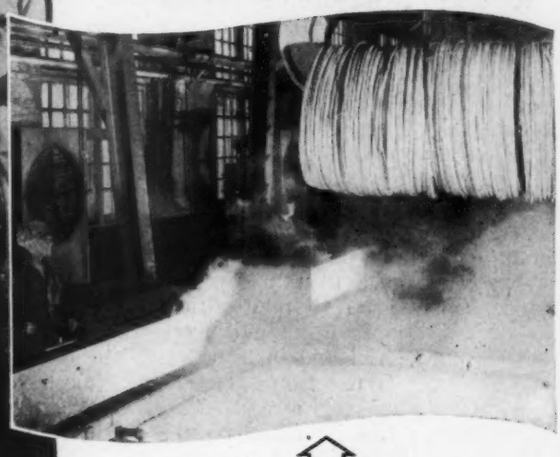
And so, through these and other ways, we must work constantly and untiringly at the job of creating more jobs in the South through an increase in the volume of goods, of materials that have to be produced, hauled, transferred, stored, transported, refined, manufactured, processed, packaged transported again, wholesaled, retailed, and delivered, goods that all along the way must be accounted for, must be inspected,

(*Continued on page* 328)

GET MORE SERVICE PER DOLLAR...

with the *RIGHT* wire rope!





Straight line wire cleaning—cleaning and lubricating wire for further drawing—is only one of many special methods used in the Roebling mills to insure longest rope service on the job.

You can find the right rope . . . the correct balance of strength and flexibility plus peak fatigue and abrasion resistance . . . by choosing a Roebling "Blue Center" Steel Wire Rope.

There's only one wire rope that is right for any one job. Of all the wire ropes manufactured only one is the right size, the right material, the right construction. And whether it proves to be preformed or non-preformed, you'll find the *right* rope for your job in Roebling's complete line.

FOR EXAMPLE:

Roebling "Blue Center" Steel Wire Rope alone can be supplied in literally hundreds of sizes and constructions... either preformed or non-preformed.

EXPERT ADVICE

Get the right rope working for you. A Roebling Field Engineer will be glad to help you choose it. Call him at our nearby branch office or through one of our distributors... and get more service for your wire rope dollars.

Manufacturers of Wire Rope and Strand • Fittings • Slings • Suspension Bridges and Cables • Aircord, Aircord Terminals and Air Controls • Aerial Wire Rope Systems Electrical Wire and Cable • Ski Lifts • Hard, Annealed or Tempered High and Low Carbon Fine and Specialty Wire, Flat Wire, Cold Rolled Strip and Cold Rolled Spring Steel • Screen, Hardware and Industrial Wire Cloth • Lawn Mowers

JOHN A. ROEBLING'S SONS COMPANY

TRENTON 2, NEW JERSEY

Branches and Warehouses in Principal Cities

PREFORMED • NON-PREFORMED

ROEBLING

PACEMAKER IN WIRE PRODUCTS

The P.A. and Public Relations

(*Continued from page* 326)

handled, and rehandled. Upon that process of producing and handling goods depends the demand for clerical, sales and other service activities that grow out of the wealth created and the profits made. Our whole structure of employment rests upon the manufacture, distribution and consumption of physical goods.

Somewhere, many years ago, I read an old proverb which said that no man has seen tomorrow's sun. I am not so sure, however, that the statement is true, because I believe that some men do see tomorrow's sun and know how beautifully it is going to shine on this Southland.

Some of those men are in this room today. Through their vision, courage and hard work, the development of industrial and institutional procurement in the Southeast has made remarkable progress. This progress has had its effect on the economy of this region. As procurement departments become still better organized, better equipped for doing their public relations job, and as they become better recognized by management for their worth, even greater progress toward a more prosperous South is in prospect.

The Purchasing Agent Specialist in Vendor Relations

(*Continued from page* 114)

agent. This sales-purchasing relationship upon which all business depends is going to need cooperation of the men on each side of the desk, so that all of us can get our business economy rolling along at a faster speed. The purchasing agent is again getting down to fundamentals. Where delivery of anything that might be used on the job was the keynote, we are going to find the salesman is going to have to deliver materials that more nearly conform the quality standards desired by his company.

The purchasing agent is going to have to get the thought out of his head that things are hard to get. Salesmen, likewise, are going to have to eliminate from their minds that anything has been hard to get. It is true that salesmen have been expeditors and order chasers, but good salesmen are going to continue to do a job of expediting the purchasing agent's orders, and the purchasing agent who has built up the best good will is going to get the best good service.

The purchasing agent's attitude toward sales people, in his daily interviews and contacts, has a powerful influence in developing good will for his company throughout the sales fraternity. Now, with the changes occurring in the cross current of business activity, it is interesting to watch the ability with with which some salesmen are meeting these changed conditions and other salesmen are letting it get them down. The salesman who really accepts this concept of being the eyes through which the purchasing agents do their jobs, is out helping the purchasing agent find where supplies exist. He has an active inquiring mind. He does everything he can to make sure the purchasing agent does a good job for his company. He keeps the purchasing departments informed on business trends in his own organization. He is on the lookout for new and substitute materials that can aid not only in handling the production of the purchasing agent he calls on, but also aid the production and development of the products puchased by his own organization, so that through better production as well as through better coordination his organization can better serve business.

If it's a Forging—
See Billings

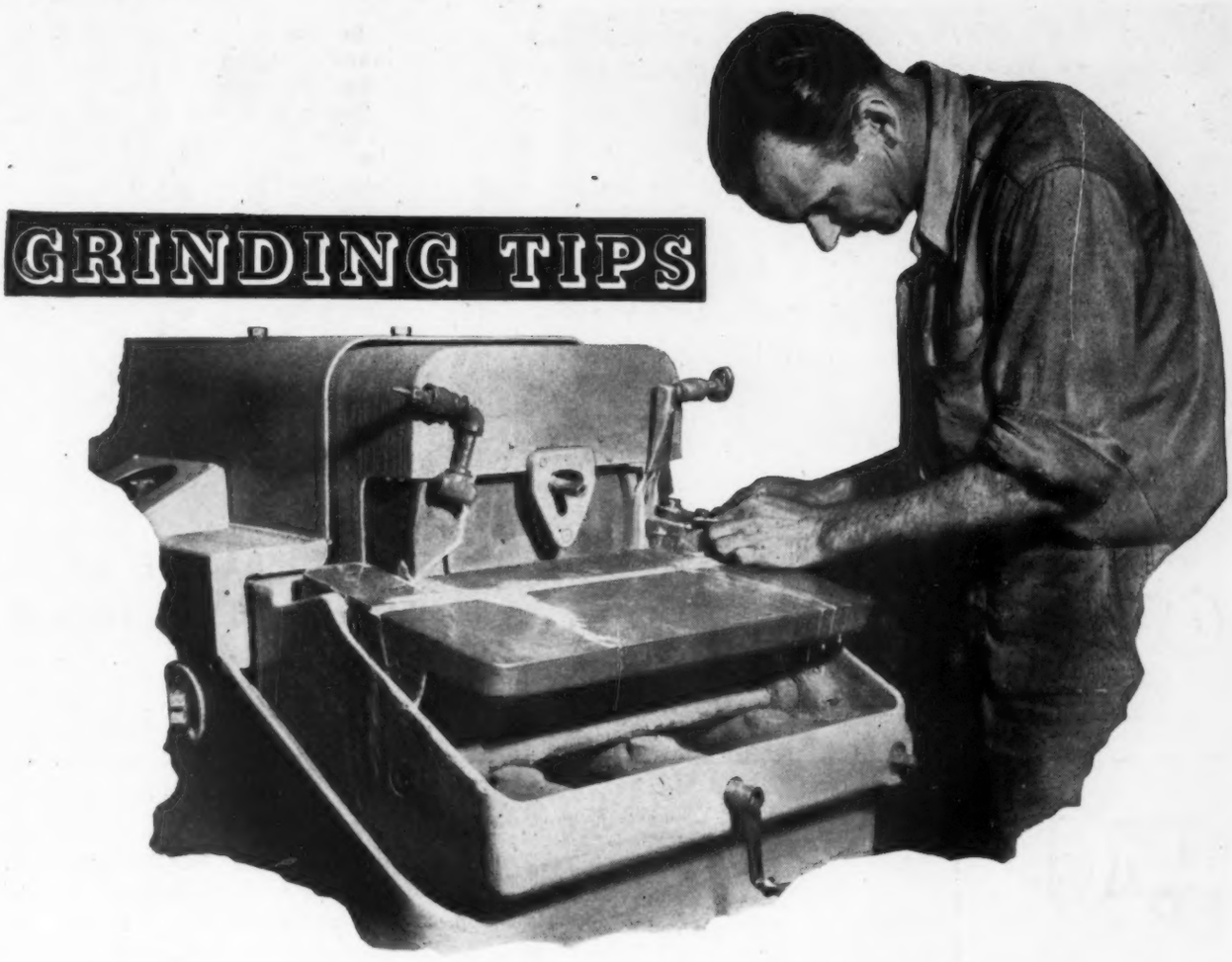
Why? . . . Because Billings hammers talk . . . Production!

No. 7

WRITE OUR FORGING DIV.

Creative or Production . . . Billings Forging Designers and Production Engineers are available for consultation . . .

THE BILLINGS & SPENCER CO.
MAIN OFFICE AND PLANT
HARTFORD 1, CONN. U. S. A.



. . . HOW TO GRIND CARBIDE-TIPPED TOOLS

ARE CHIPPED AND CRACKED carbide-tipped tools a common complaint in your shop? Are your grinding wheels wearing out too soon? Here are two "tips" on grinding which Robertson engineers have found very helpful in conserving both tools and wheels.

The grinding of carbide tools by applying heavy pressure against the wheel is extremely harmful. Actually, grinding is accomplished much faster, and with much more satisfactory results, by passing the tool slowly across the face of the grinding wheel with a light, uniform pressure. This results in fewer wheel dressings, making for longer wheel life, and eliminates chipping and cracking of tips.

Grinding both the shank and the carbide tip at the same time glazes the grinding wheel and generates excess heat, causing the wheel to lose its free-cutting action. This will also chip or crack the tip and tend to loosen it in its setting. These faults are overcome by undercutting the shank about 2° more than the carbide tip.

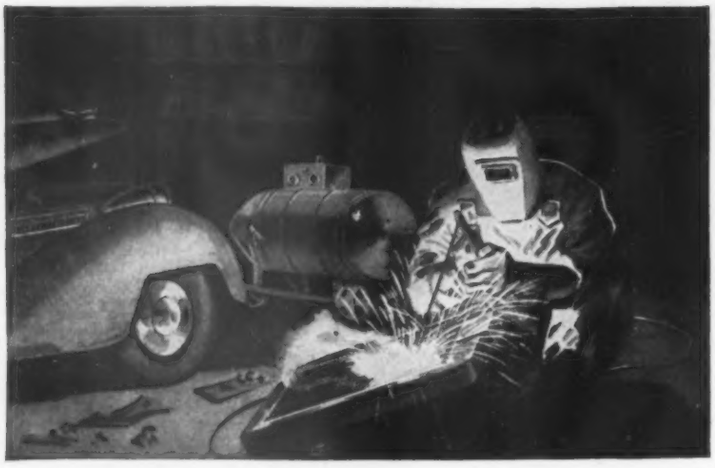
Robertson Cool-Cut wheels for grinding carbide-tipped tools range from 6″ x 1″ up to and including 14″ x 4″ x 11″, all plate-mounted.

Highly satisfactory results have been obtained using our GC60-I-2V for roughing operations and our C120-HV for finishing operations. For the best results from any grinding operation, make sure your grinding wheels are Robertson Cool-Cuts . . . the wheels that are precision-built for the toughest jobs.

ROBERTSON COOL-CUT

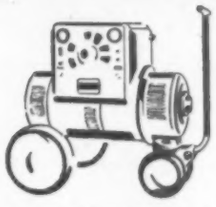
ROBERTSON MANUFACTURING COMPANY
TRENTON 5, NEW JERSEY

Manufacturers of Vitrified Grinding Wheels • Mounted Wheels • Segments

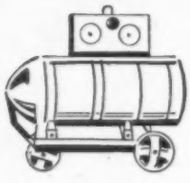


HOW TO GET ARC WELDERS IN A HURRY!

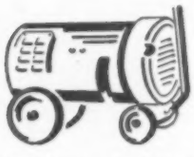
IT'S EASY FOR THE SMALL BUSINESSMAN TO GET THEM AT A SAVING.



Hobart—Standard models of this make available in large quantities and most ratings.



Lincoln—In all models and most ratings. Many in the popular 300—400 Ampere size.



Westinghouse—Portable models available in limited quantities.

Electrodes and Welding Rods—Millions of pounds available in all types and sizes.

Hundreds of arc welders are available to small businesses for immediate delivery. Some are unused. Some are used. All were made by well known manufacturers.

Now they are offered for sale at real bargain prices.

These are the type welders needed by garages, repair shops and maintenance shops. The large inventory includes welders of 200, 300 and 400 Ampere Rating, either DC or AC. They are located at various points throughout the country and may be inspected before purchase.

To obtain complete information on availability, location and condition of the equipment you want, fill out the coupon and send it to your nearest War Assets Administration Regional Office.

For full information clip and mail this coupon to:

War Assets Administration:
Please send me complete information on the availability, condition and location of the following types of equipment.

....Hobart Arc Welders ....Westinghouse Arc Welders
....Lincoln Arc Welders ....Electrodes and Welding Rods
Arc Welding Equipment AC.... DC....
Electric Motor Driven: Volts....Phase....Cycles....
Transformer Type: Volts....Phase....Cycles....

Name .....
Firm .....
Address ..... State .....
City .....

All Arc Welders are subject to priority regulations. VETERANS OF WORLD WAR II are invited to be certified at the War Assets Administration Certifying Office serving their area and then to purchase the material offered herein.

EXPORTERS

The War Assets Administration solicits your inquiries. Communicate with your foreign clients promptly.

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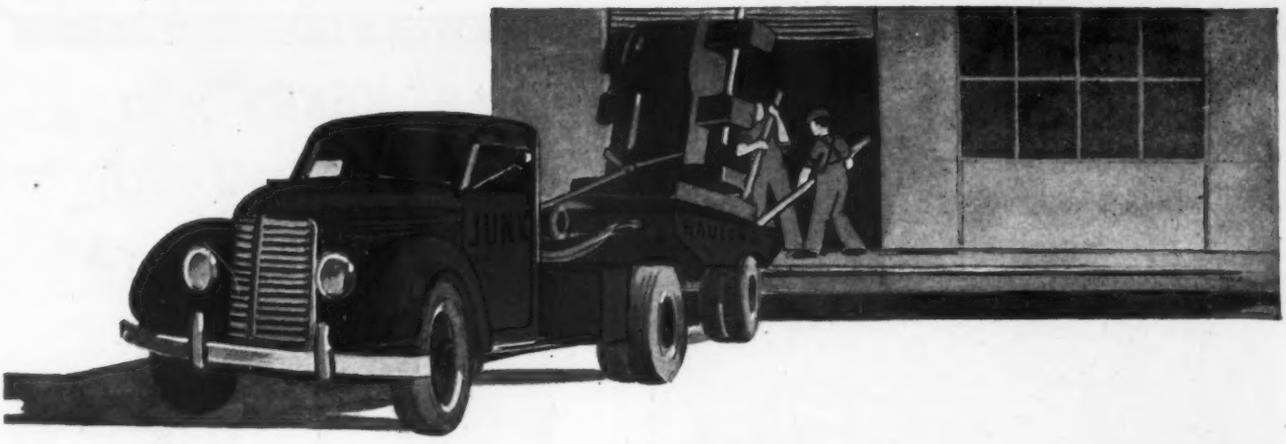


WHEN IS A MACHINE *"Washed Up"?*

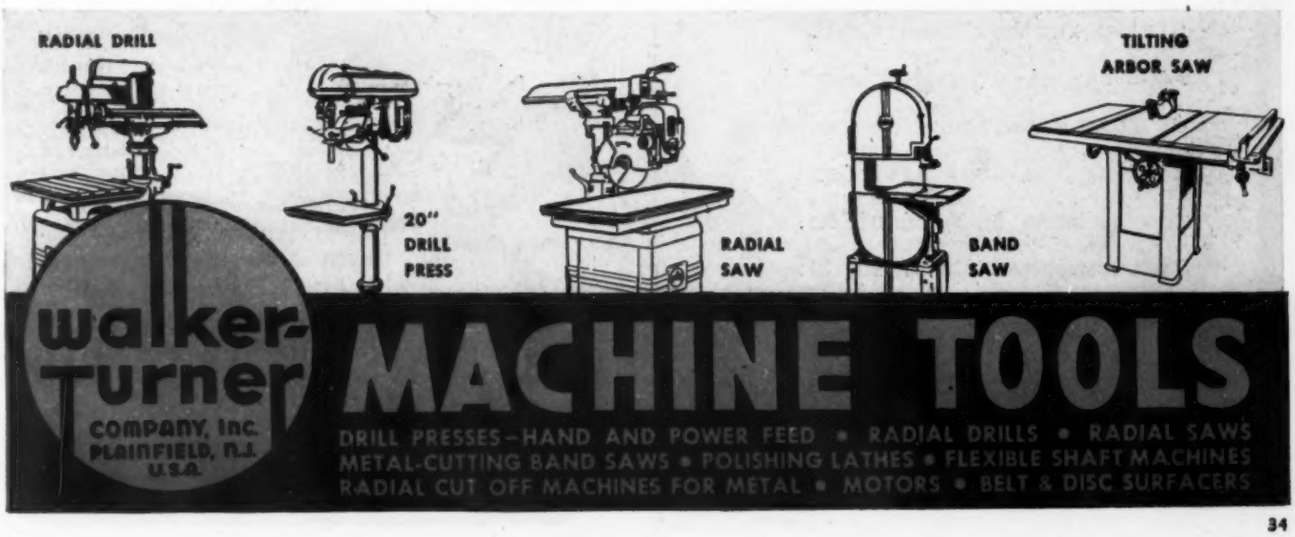
In seven years some say—but in modern production practice it is not a question of years or how much the machine has earned or still owes you. The question is, will your equipment enable you to compete with the new, faster working, more efficient and flexible layouts in your competitors' plants.

A five-year-old Machine Tool is "washed up", for instance, if it can be replaced by one costing a few hundred dollars that will write itself off in less than a year through improved production. That's the story of Walker-Turner Machine Tools wherever metals, wood or plastics are drilled, cut or shaped.

These machines are "light" only in weight and price. Their production output in the past eight years has astounded the management of thousands of plants—large and small—throughout the country.

A key to high manufacturing efficiency and **low manufacturing costs** is the modern, flexible, light machine tool. It represents small capital investment, flexibility of operation, increased productivity and low operating costs.

Walker-Turner Machine Tools are sold only by authorized Industrial Machinery Distributors. A general catalog will be sent on request.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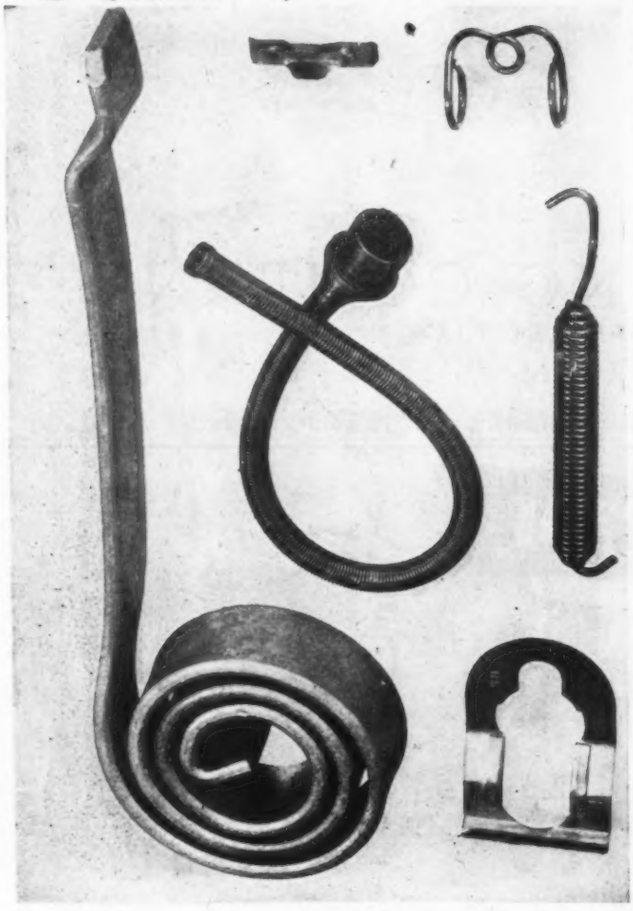

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long overdue
is the old-fashioned
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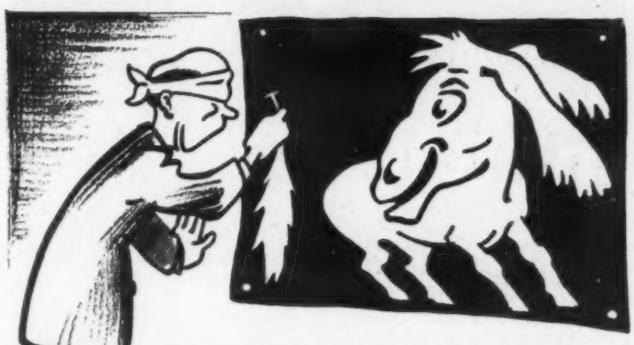

IT COSTS MONEY TO GUESS WRONG

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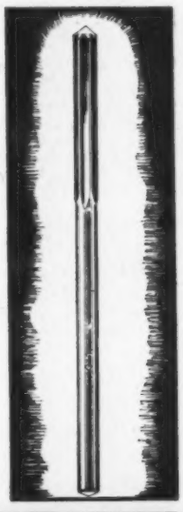

Write today for descriptive catalogs giving prices and sizes. L & I Ground-from-the Solid Reamers are available in any quantity for immediate delivery. Stock sizes from .040″ to .3125″ diameter. Specials in any size.

7

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Chicopee • Mass.

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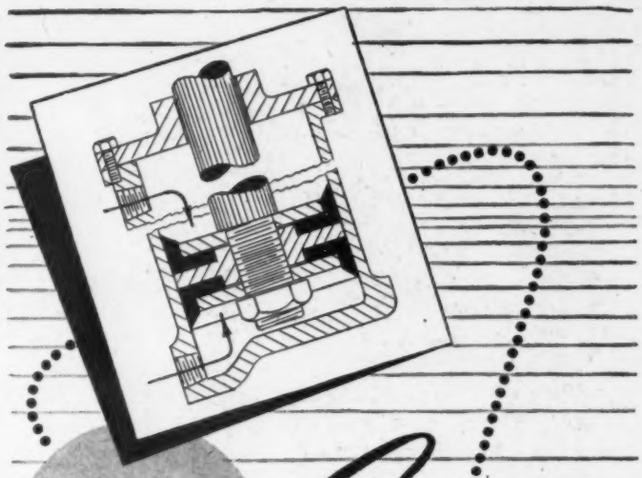

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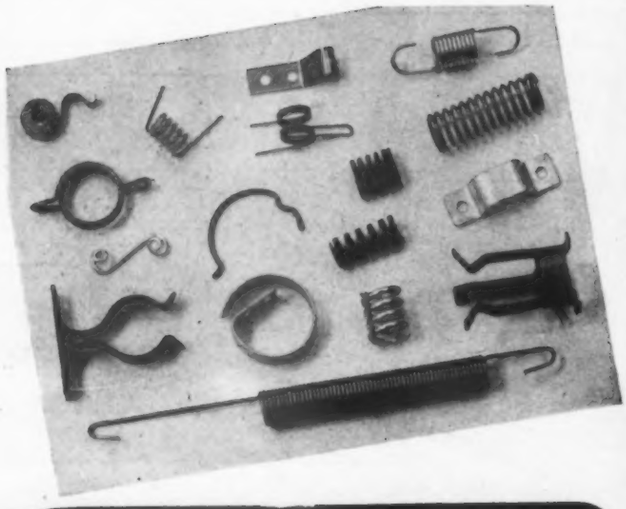

Do you buy SPRINGS

to pass inspection, or to Perform a Vital Function?

Springs are the muscles and brains of mechanical equipment. In them is stored the energy which makes possible most automatic movements. The cost of even the most complicated springs is infinitesimal compared to the cost of completed products, which depend upon them for proper functioning. In the case of failure, the labor cost of spring replacement may be hundreds of times the original cost of the spring. Yet, in most cases, even the best qualified inspection departments cannot distinguish, from an ordinary spring, a spring with those superior qualities which make it a profitable investment.

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Largest Independent and Exclusive Metal Ball Manufacturer

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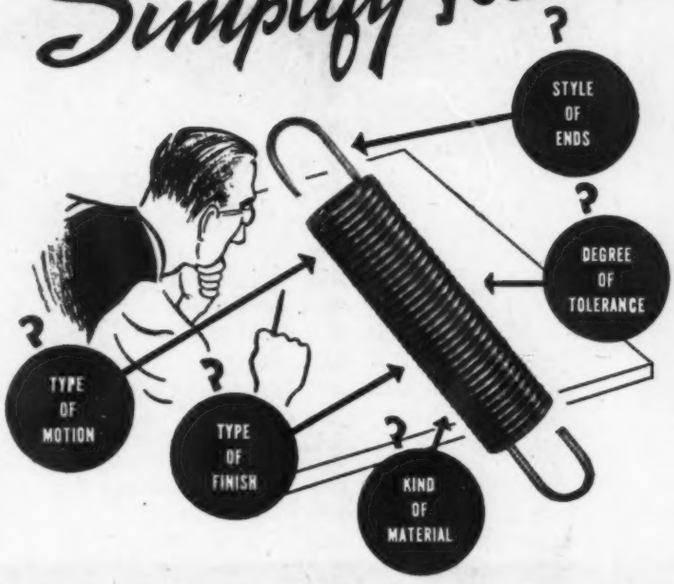

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1. Best results in operating efficiency
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You save the time and expense of "trial-and-error" methods. You get the advantage of wide experience in the selection and use of spring materials, platings and finishes. And you benefit by production facilities newly enlarged[5] to give even better service, whether your order is large or small.

Call Raymond engineers in at the beginning of your spring plans for quick, dependable results.

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DIVISION OF ASSOCIATED SPRING CORP.
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RAYMOND SPRINGS

. . . AND CAN BE IDENTIFIED BY THESE 3 FEATURES

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2. The Pull-tab Opener found only on Saftex. It saves users time and tape.
3. SAFETEX grooved gumming, with its exclusive herringbone design means tape that sticks faster, holds tighter.

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CENTRAL PAPER COMPANY, Menasha, Wis.

of the finest materials with high
non-spill pouring lip means no dan
high-gloss baked-on red enamel fin
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SAYS IT—
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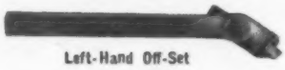
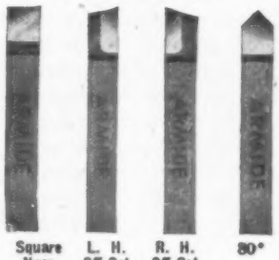

Left-Hand Off-Set

Right-Hand Off-Set

ARMIDE Gray Cutters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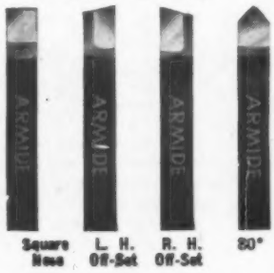
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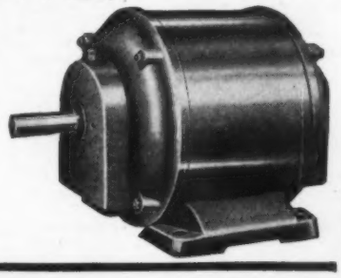

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*Unusual** **...Quality of Product**

*Unusual** **...Dependability of Production**

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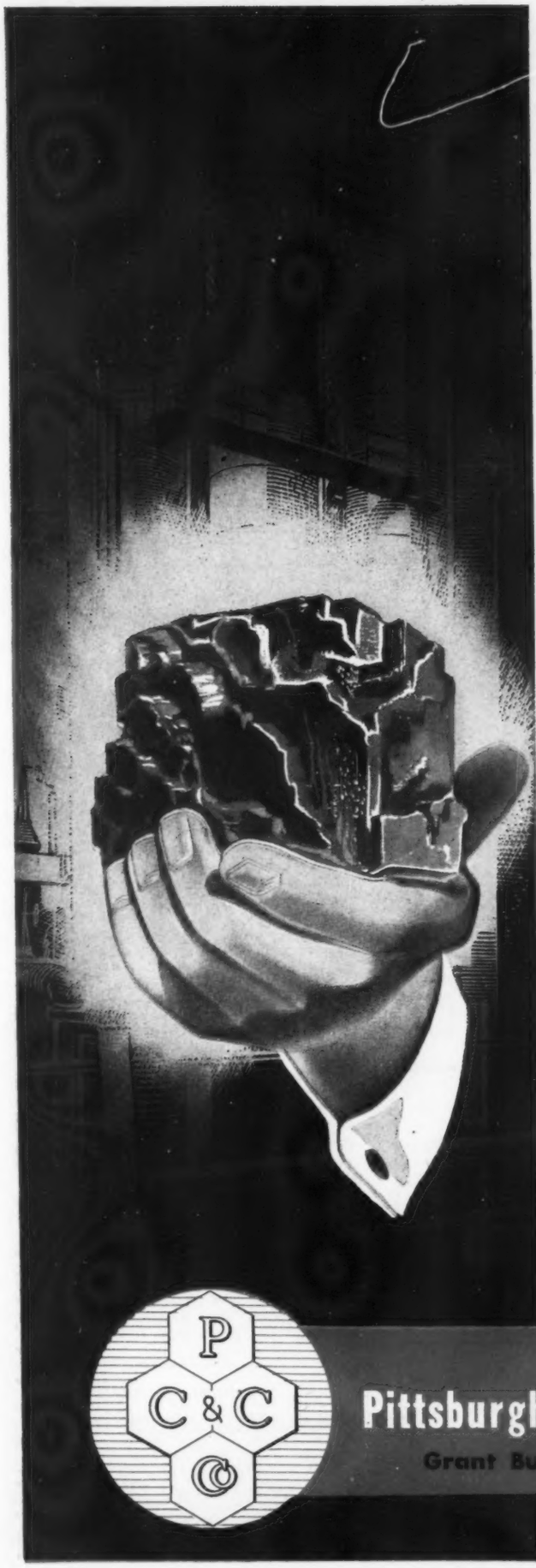

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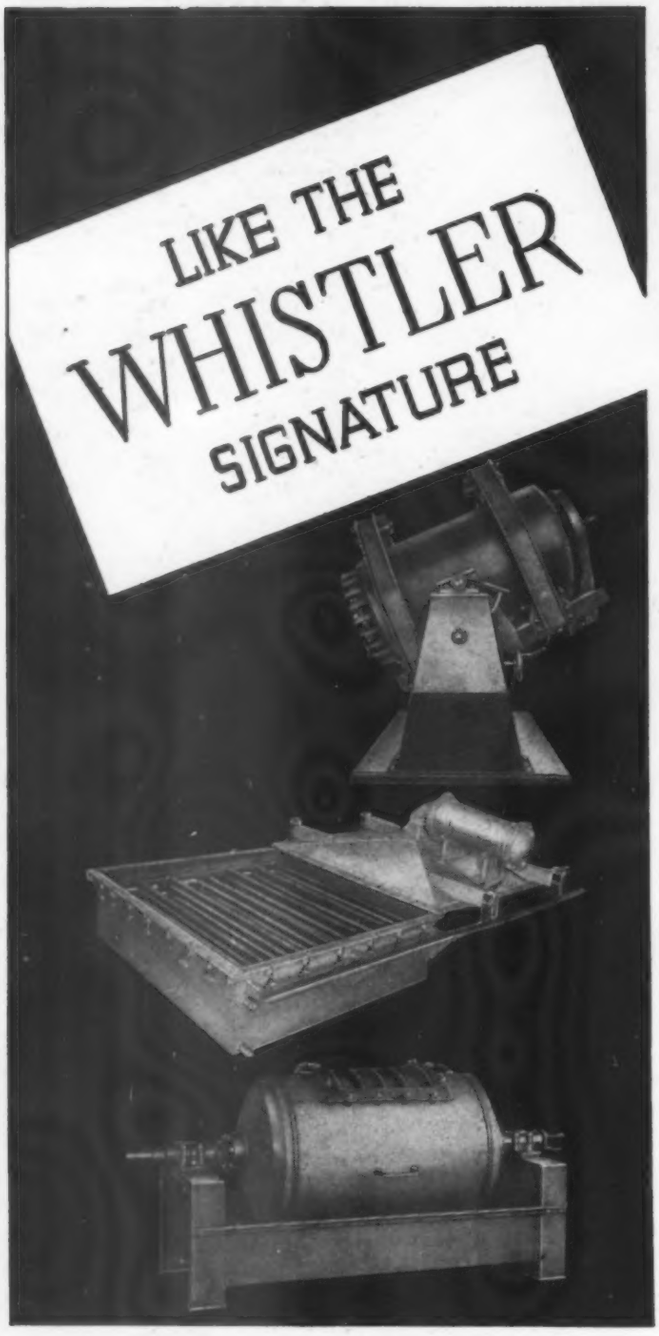

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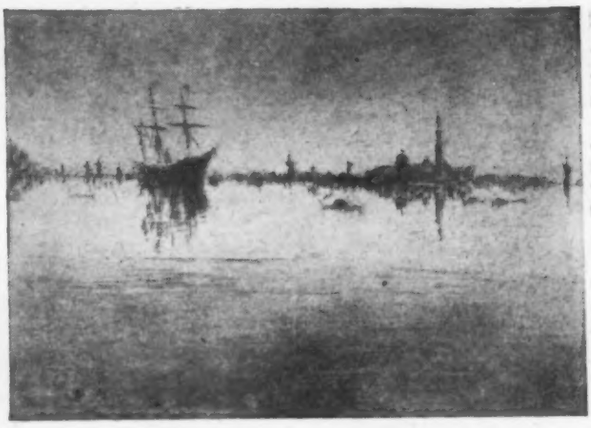

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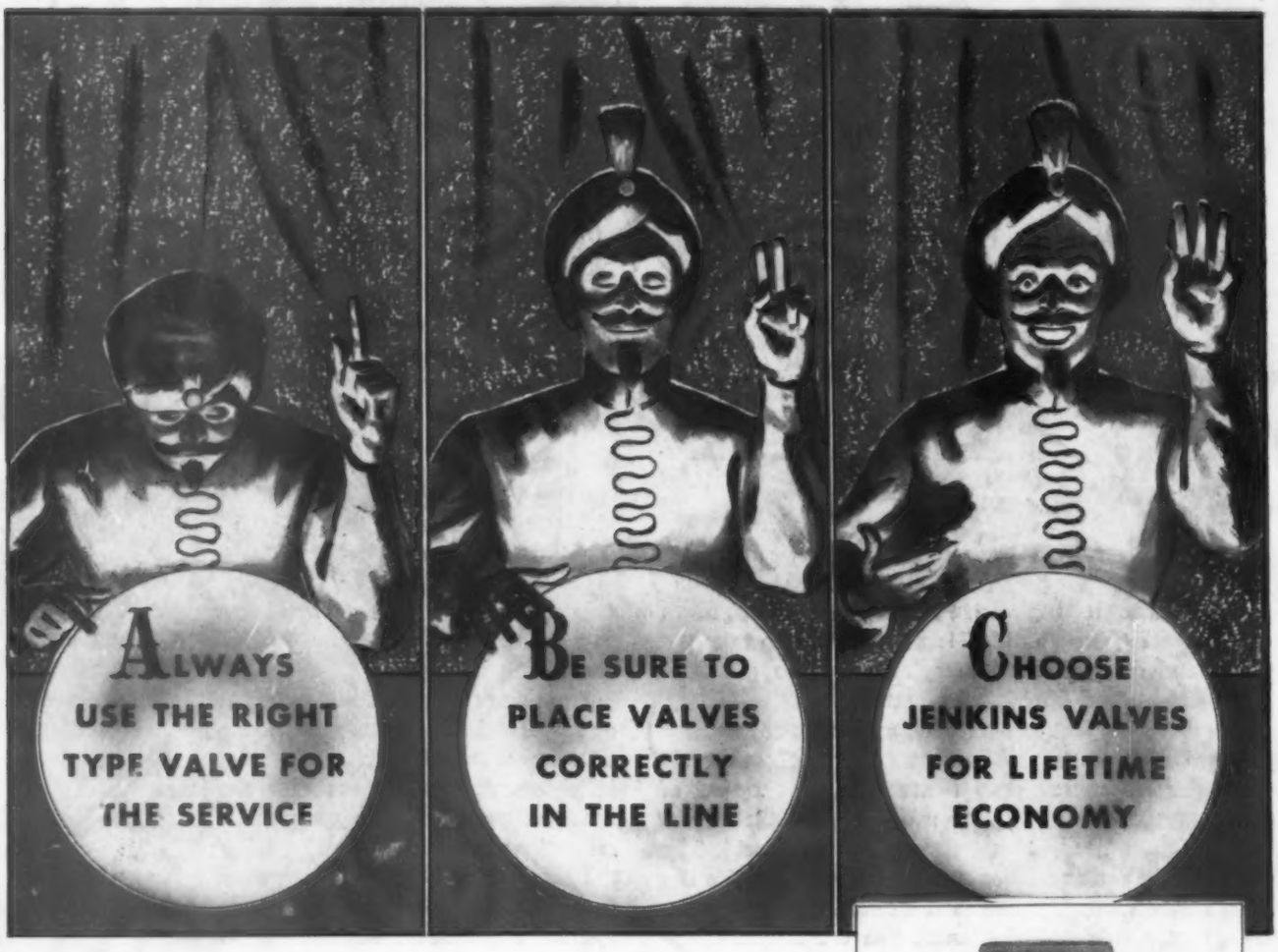
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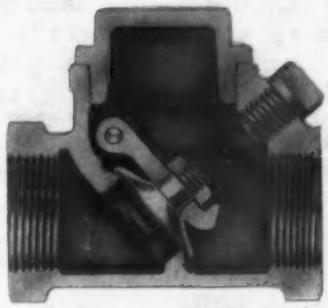

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